Puget Sound Naval Shipyard & Intermediate Maintenance Facility

Dry Dock Discharge Dye Study

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Executive Summary

This document describes results of a dye release study performed at Puget Sound Naval Shipyard & Intermediate Maintenance Facility performed in April 2004.
The goal of the study was to measure the amount and spatial extent of dilution of dry dock discharge water when mixed into adjacent Sinclair Inlet waters under normal operational conditions.

The approach taken was to add known amounts of fluorescent dye to dry dock discharges and measure its concentration once it is mixed with the adjacent receiving waters. Dye measurements were made at a fixed point near to the discharge point to determine the minimum dilution in the plume. The spatial distribution of dye was also mapped as a function of time to assess the full spatial extent of mixing over a range of tide conditions.

Normal dry weather discharge of ground water mixed with dye from dry docks 6 and 4 was successfully mapped in the adjacent inlet waters during both flood and ebb tide conditions. The discharge plumes rose to the surface relatively quickly after leaving the discharge pipe because of their lower density relative to the surrounding inlet water. Plume water reached the surface within several meters of its discharge from Pump Well 6 underneath pier 9. The plume surfaced about 30 m out from quay wall (~40 m from the end of pipe) from Pump Well 4. The increased distance away from Pump Well 4 was presumably a result of a higher discharge velocity through a special check valve unit.

At Pump Well 6, the "boil" region was diluted by only a factor of 1.5 whereas the boil off Pump Well 4 was diluted by a factor of 7. However, there was a relatively quick and efficient mixing of the plumes at both locations once they reached the surface. Background levels were typically reached within 100 m or so of where the plumes surfaced. Dilution factors of between 100 and 1000 were reached while still within the confines of shipyard security boundary off Pump Well 6 and well within the confines of the piers off Pump Well 4. Average dilution factors in the boxed areas outside each outfall (Figure 8 and Figure 9) ranged between 200 and 1000.

While there was clearly some advective flow that mixed the plumes out from the “boil” region, the majority of the mixing occurred while spreading at the surface. In some instances the advective flow resulted in patchiness of the distribution but the principal variability in the spatial distributions was a result of sampling at different stages in the pump cycle rather than tidal flow. There was a slight buildup in background levels of dye with successive pump cycles in the immediate region of the surface "boil" though there was no clear relationship between tide stage and the build up.

The study data should prove useful in validating numerical plume models that can be used to address a variety of discharge and tidal conditions at these locations. The results should provide support in developing appropriate National Pollutant Discharge Elimination System permit limits for these discharges.

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INTRODUCTION

This document describes results of a dye release study performed at Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNS & IMF) performed in April 2004. The goal of the study was to determine the amount of dilution that occurs to dry dock ground water and floor run-off when it is discharged into adjacent waters of Sinclair Inlet (Figure 1). The results are designed to support development of appropriate National Pollutant Discharge Elimination System (NPDES) permit limits for these discharges, including validating discharge models used to evaluate mixing zones.

Background

Sinclair and Dyes Inlets, Washington were listed on the 1998 303(d) list of impaired waters because of fecal coliform contamination in the marine waters and metals and organic contaminants in bottom sediments and fish tissues (WDOE 1998). The Puget Sound Naval Shipyard & Intermediate Maintenance Facility, Department of Ecology, U.S. Environmental Protection Agency and local stakeholders are working together on Project ENVVEST (an acronym for ENVironmental InVESTment) to address contamination issues and develop water cleanup plans for the watershed (Navy, EPA, and Ecology 2000, ENVVEST 2002).

Dry dock discharges from the Shipyard to Sinclair Inlet require NPDES permits issued by the U.S. Environmental Protection Agency. The current dry dock permit has an average monthly total recoverable copper concentration limit of 19 ppb (U.S. EPA, 1994). In addition, the permit also contains loading limits expressed in pounds per day. Although acute and chronic water quality criteria are not exceeded in Sinclair Inlet (Katz et al., 2004), the potential for adding to elevated copper levels in sediments adjacent to the Shipyard is still a concern.

The Clean Water Act and Washington State regulations (Ch. 173–201A WAC, WAC 2003) allow for the use of a mixing zone when all known, available, and reasonable methods of prevention, control, and treatment (AKART) have been implemented to reduce the amount of contaminants in the discharge. While direct measures of dilution in the receiving environment can provide excellent results under a small set of conditions, numerical models are used to provide estimates of effluent mixing over any likely discharge scenario (U.S. EPA 1991; WDOE 2004, 2002). Given that AKART is currently being implemented by PSNS & IMF for discharges from the Shipyard, this investigation will provide direct measurements of dilution and mixing under specific conditions that can be used to develop more detailed mixing zone models (U.S. EPA 1991, Matlock 2003, PSU 2004).

Figure 1. The location of PSNS & IMF in Sinclair and Dyes Inlets, WA. (Photo from Washington Department of Fish and Wildlife).

Study goal

The goal of this study was to measure the amount and spatial extent of dilution of dry dock discharge water when mixed into adjacent Sinclair Inlet waters under normal operational conditions. The study is thus a preliminary step in evaluating mixing dynamics near the Shipyard that may be applicable to future permits for dry dock and storm water discharges. The data derived from this study can also be used to validate numerical models and thereby be useful in addressing dilution and mixing under a variety of possible conditions.

Technical approach

The approach taken in this study was to add known amounts of fluorescent dye to dry dock discharges and measure its concentration once it is mixed with the adjacent receiving waters. Dye measurements were made at a fixed point near to the discharge point to determine the minimum dilution in the plume. The spatial distribution of dye was also mapped as a function of time to assess the full spatial extent of mixing over a range of tide conditions.

Study site

The six dry docks at PSNS need to be continuously pumped dry because of groundwater infiltration and when there is a storm runoff. There are three main discharge outfalls that are used for discharging this groundwater. Pump well 6 is used to pump groundwater from Dry Dock 6 at a nominal rate of 5 MGD through Outfall 19 (Figure 2). Outfall 19 is a 36 inch square pipe located underneath Pier 9 at a depth of a ~ 5 ft below mean lower low water (MLLW). The outfall pipe points at about a 45-degree angle several feet inboard of the pier head. A clear surface "boil" forms under the pier during discharge. A large barge was berthed on the pier head next to where the plume boiled to the surface. Discharge parameters for Pump well 6 are shown in Table 1.

Pump wells 4 or 5 are used to pump groundwater from dry docks at a nominal discharge rate of 3 MGD. Pump well 4 discharges through Outfall 18 while pump well 5 discharges through Outfall 18A (Figure 3). Discharges are switched between the two pump wells as needed by dry dock operations. The outfall pipes are both 24 inches in diameter and are located approximately 7 feet below MLLW. Outfall 18 A discharges to the east under Pier 3. Outfall 18 discharges to the south along side Dry Dock 4. The end of pipe for Outfall 18A is located ~30 feet back under the piers. The discharge pipe at Outfall 18 is terminated at the quay wall with a 24 inch Red Valve Tideflex© checkvalve. A clear surface "boil" forms at the surface about 30m out from the head of Dry Dock 4 when Pump well 4 is engaged. Discharge parameters for Pump wells 4 and 5 are shown in Table 1.

Table 1. Nominal discharge parameters for pump wells 4 & 5, and 6.

Pump Well	4 & 5	6
Daily flow (MGD)	3.0	5.0
Instantaneous Pump Flow Rate (gpm)	7,200	15,300
Pump Cycle Time (min)	190	30
Pump Run Time (min)	60	7
Approximate Run Time (%)	30	24
Discharge Pipe Diameter (inches)	24	36*
Discharge Depth (ft MLLW)	-7.4	-5.1
Target dye conc at discharge point (ppb)	100	100
Dye (0.4%) addition rate to achieve concentration (gpm)	0.18	0.38

* Discharge pipe is square

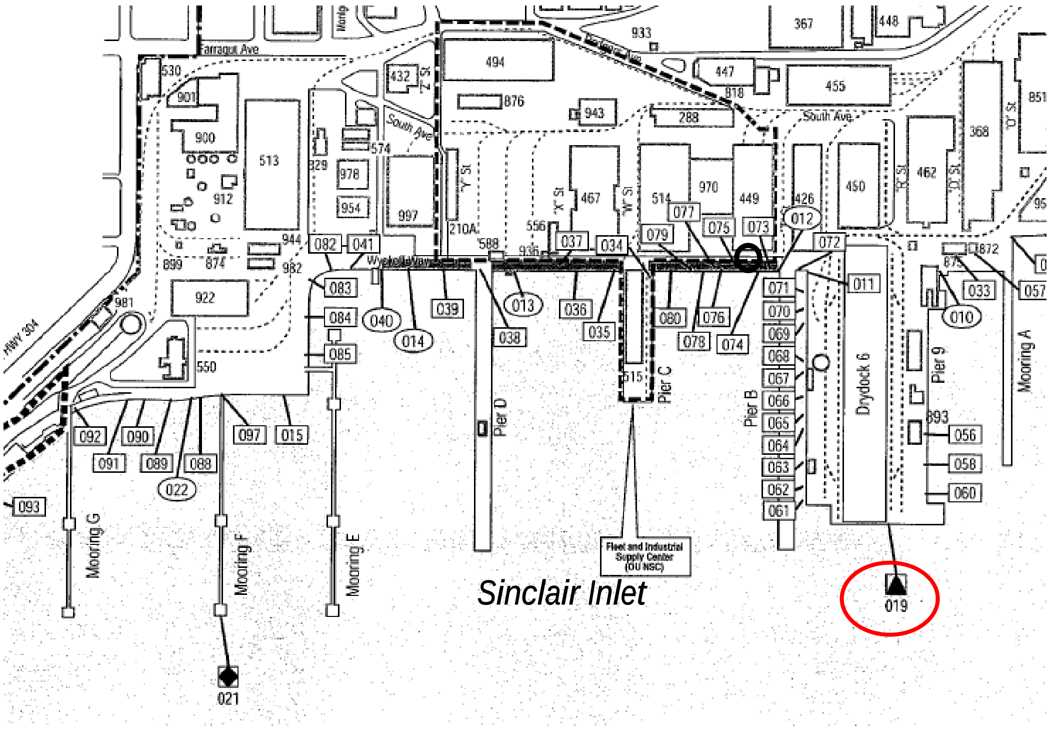


Figure 2. PSNS study site showing dry dock 6 and discharge point through Outfall 19 for Pump Well 6.

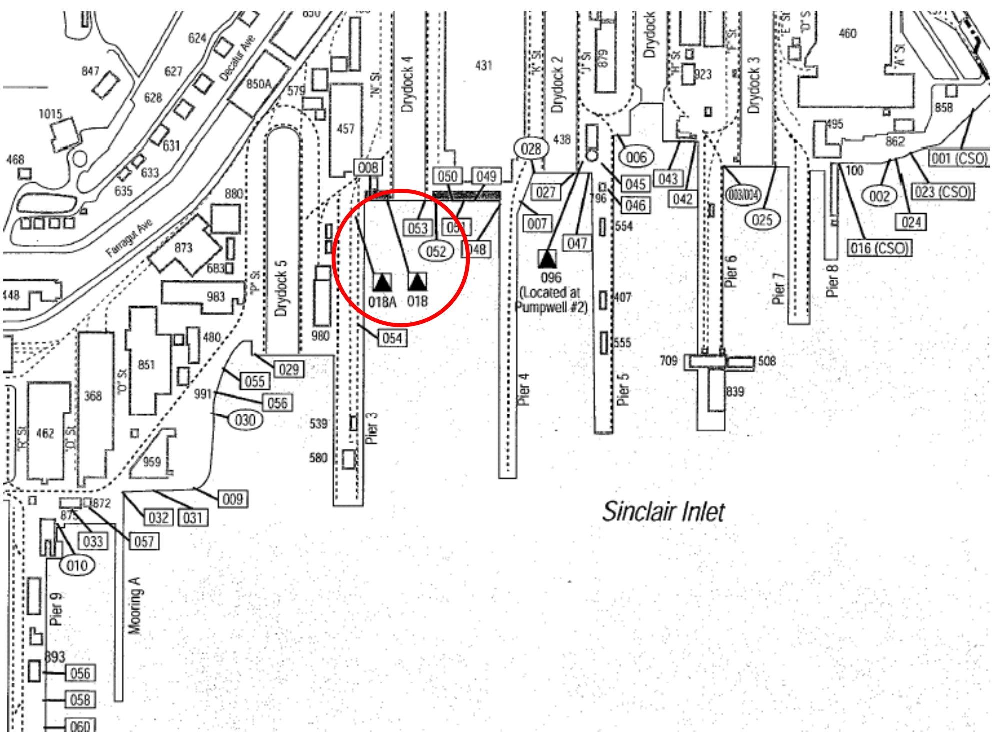


Figure 3. PSNS study site showing dry dock 4 and 5 and their discharge points through Outfalls 18 and 18A, respectively.

METHODS

Study Chronology

The study was performed between 20 and 27 April 2004. Dye pumping and monitoring equipment was installed at Pump Well 6 on 20 April. Discharge runs 1 and 2 from Pump Well 6 were performed during the next two days (Table 2). Equipment was then moved to Pump Well 4 on the 23rd and discharge runs 3 and 3A were run on the 26th and 27th (Table 2). The weather during all runs was warm, sunny, and calm.

Dye discharged from pump well 6 on Run 1 was measured over nearly a 10-hr period from shortly after the start of a flood tide until slack ebb. Thirteen mapping transects were performed during that time. Dye discharged during Run 2 was measured over a 9-hr period from shortly after the start of an ebb tide and into the following flood tide. Fifteen mapping transects were performed during that time. Dye discharged from pump well 4 on Run 3 was measured over a 9-hr period during an ebb tide. Eighteen mapping transects were performed during that time. Dye was discharged throughout the night of the 26th and into the morning of the 27th. The tide during the night reached low slack and then turned to flood during the next morning. Four mapping transects were performed on Run 3A. One goal of the overnight run was to observe whether or not there was a build up of dye through the overnight low tide condition.

Table 2 . Study chronology of pump well location, mapping times, and tide stage. Dye was discharged throughout the night of the 26th into the morning of the 27th.

Date	Run Number	Pump Well	Number of Mapping Transects	Mapping Start Time	Mapping End Time	Tide Stage
21 Apr 2004	1	6	13	06:00:03	15:49:02	Flood-Ebb
22 Apr 2004	2	6	15	12:52:01	19:38:37	Ebb-Flood
26 Apr 2004	3	4	18	08:53:33	17:44:26	Flood
27 Apr 2004	3A	4	4	05:47:02	07:50:36	Ebb

Dye Release Conditions

Concentrated fluorescein dye was added to a 30-gal plastic drum and diluted with dry dock groundwater collected from the pumping system to produce a starting mixture that, when pumped out with dry dock water would produce a nominal release concentration between 50 and 100 ppb. The amount of dye added to the starting mixture was determined using the nominal discharge rate of the pump well as well as the rate dye was introduced into the discharge stream using a peristaltic pump. It was assumed that the dye was fully mixed with the discharge water during its transit between its entry point (pump well environmental sampling ports) and the end of the pipe. A picture of the equipment setup in the pump well is shown in Figure 4 and Figure 5.

Each dye batch was pumped into the discharge pipe using a peristaltic pump. The pump rate was adjusted to a known rate prior to each run. The final rate was determined by timing the time it took to pump a known volume of liquid into the

discharge pipe. This measurement was repeated at least three times to ensure that the desired rate was met.

The exact concentration at the point of discharge during a run was calculated from the amount of dye and groundwater added to the 30-gal drum and the measured flow rates of dye and discharge water observed during the run. A calibrated bucket was used to add know amounts of dye and groundwater in making up a starting mixture. A paddle was periodically used to keep the batch well mixed. A new batch was made prior to each run and samples were kept for fluorometric calibration and validation of the starting concentration

The pump well discharge rates were determined in the following manner. Pump well start and stop times were recorded using a Boxcar® "state" logger connected to a laptop and triggered by a contact closure generated by the pump well start motor. The volume discharged during a pump cycle was manually recorded using the pump well's electronic indicator log.

Dye Discharge Monitoring

Two Turner Designs Inc. fluorometers were used for measuring dye concentrations in the receiving water (Figure 6). A benchtop Model 10A flow-through fluorometer was used to measure dye concentrations at a fixed point inside of the region where the plume first formed. At Pump Well 6 the fluorometer setup was located on a barge on the tied up to Pier 9 immediately next to where the plume boiled to the surface. At Pump Well 4, the fluorometer setup was on a barge docked along Pier 3 about 75' away from the boil location (Figure 7). Water was pumped up from just below the surface at 8 gpm through a ~ 100' of 1" hose to the fluorometer. At Pump Well 6, the intake was located under Pier 9 where it first opens up from a solid wall (Figure 8). At Pump Well 4, the intake hose was located approximately 30 m out from the quay wall directly out from the discharge pipe (Figure 9). A "Tee" valve was placed just upstream of the fluorometer to provide a slight backpressure flow through the unit. There was a lag time of about a minute for water to reach the fluorometer. The analog signal from this fluorometer was digitized and acquired at a 1-Hz rate on a laptop computer. The clocks on the data acquisition computers were set the same time each day.

A Cyclops 7 *in situ* fluorometer incorporated into a miniature version of the Marine Environmental Survey Capability (Katz et al., 2004) to map out the spatial distribution of dye from a moving boat. The mini-MESC is real-time high-resolution multi-sensor and data acquisition system that is used for mapping water quality parameters in coastal waters. In addition to the Cyclops flourometer, MESC components included in this study were a conductivity, temperature, and depth (CTD) unit, light transmissometer, GPS differential navigation system, and a data acquisition computer. The mini-MESC was deployed on a small shipyard vessel with its towed sensors mounted on the bow just below the water surface (Figure 10). All sample depth, salinity, temperature, light transmission, fluorescein dye fluorescence data, and position location data were collected at a 2-Hz data rate. The boat transited at about 3-kt leading to an along track data resolution of less than 1 m.

The mini-MESC was used to map out the spatial distribution of dye on multiple repeat transects throughout the discharge period. Example mapping transects off each pump well are shown in Figure 8 and Figure 9. Transects were occasionally adjusted to provide more spatial coverage when dye concentrations were observed further away from the point of discharge. Repeating similar tracks allowed the ability to compare variations through time.

Most of the data were collected at or near the water surface though vertical profiles and tow-yos (vertical profiles performed while moving) were also performed to determine plume depths. It was discovered during Run 1 that the dye plumes were very shallow, usually less than 1 m. The typical transect sampling depth on the later part of Run 1 and the other three runs were adjusted to less than 0.5 m to capture the maximum concentrations of surface dye.

Dye Calibrations

Flourescein dye is a bright green liquid that is 40% dye by weight. It fluoresces at an excitation wavelength of ~490 and has an emission wavelength of 525 nm and has a nominal detection limit of 0.1 ppb. The fluorescence signal can vary as a function of temperature (@ 0.4%/deg C) and sunlight can degrade the signal over several hours under some circumstances. Dye variations as a result of temperature fluctuations and sunlight degradation were considered negligible under the study conditions and therefore no corrections were made to the dye calibrations used to determine concentration.

A calibration standard was made prior to the survey by diluting a volume of concentrated dye with deionized water to a final volume in a volumetric flask. Calibrations were performed in the field at the start, in the middle, and at the end of the surveys by making serial additions of the standard to a known volume of seawater and measuring the fluorescence signal. Calibrations were run simultaneously on both fluorometers using a recirculating pump to flow water through the benchtop unit while the in situ unit was placed into the solution directly. The range in dye concentrations measured was 0.0 to ~50 ppb. Additionally, samples of each batch of dye pumped into the drydock discharge were collected and measured for concentration using the fluorometers as a check against the concentration determined volumetrically. A regression of the fluorometer voltage as a function of concentration was used to determine the dye concentration of the field data.

Current Measurements

An acoustic Doppler current profiler was deployed for about a month, between Piers 3 and 4 to assess ambient current flows close to the point of discharge from Pump well 4. However, no data were collected when an inadvertent computer command stopped the unit from data logging. Obtaining these data would be useful in future modeling efforts.

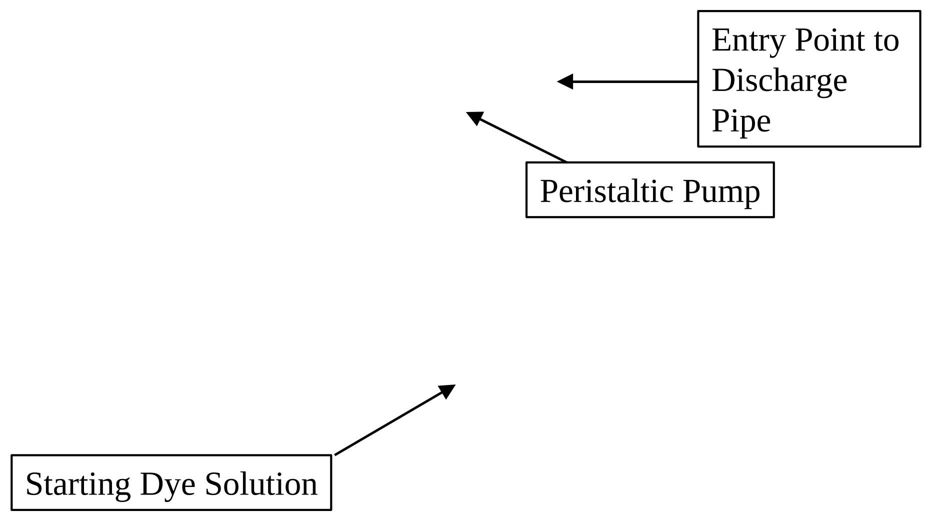


Figure 4. Photo of Dye pumping setup in Pump Well 6.

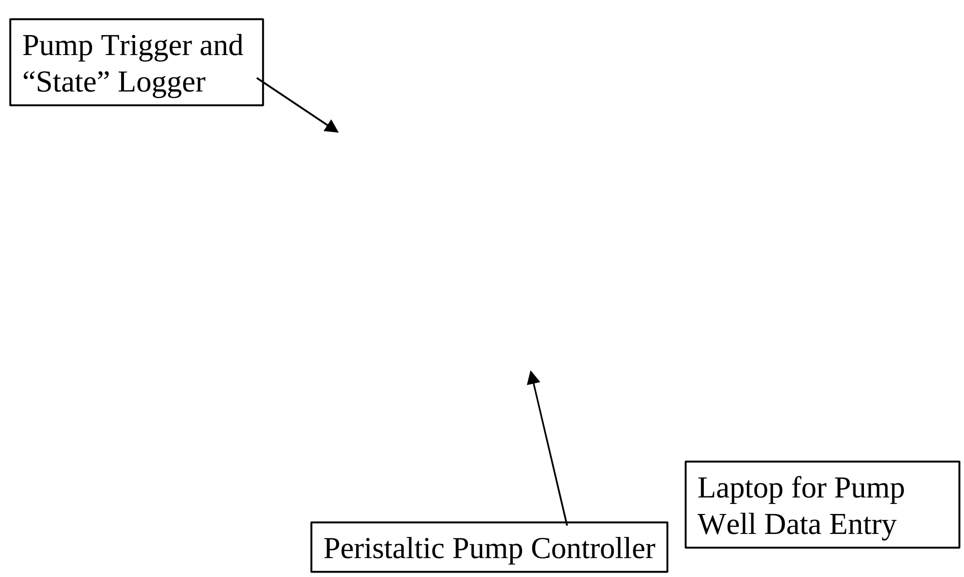


Figure 5. Photo of dye pump controller, laptop, and "state" logger equipment in Pump Well 6.

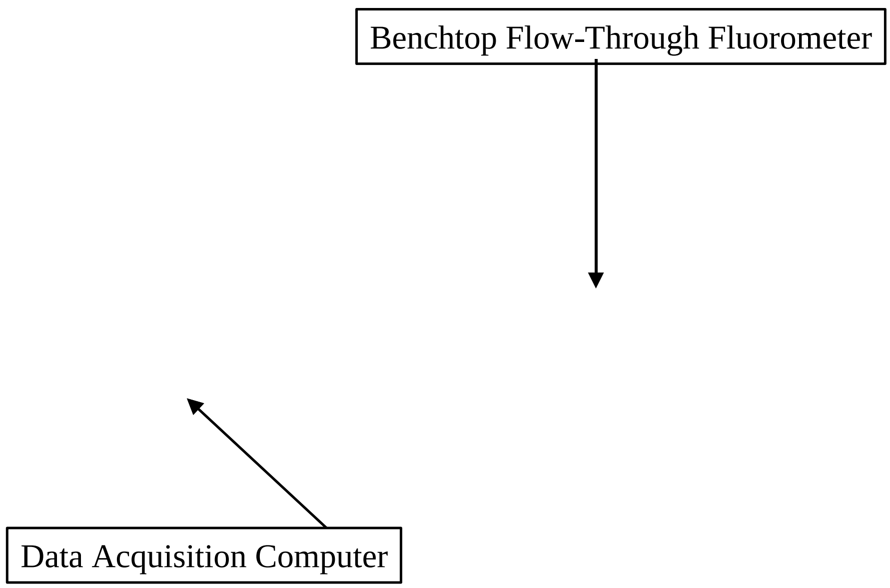


Figure 6. Photo of benchtop flow-through fluorometer and data acquisition computer used to measure dye concentrations within the starting discharge dry dock plume.

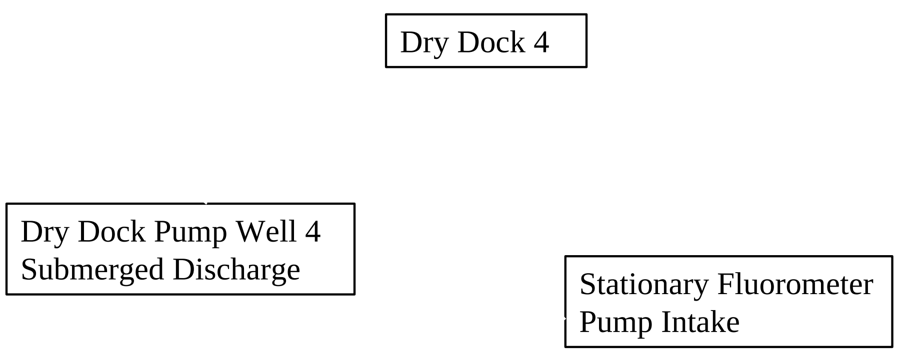


Figure 7. Photo of hose intake location for stationary dye fluorometer shown off Dry Dock and Pump Well 4.

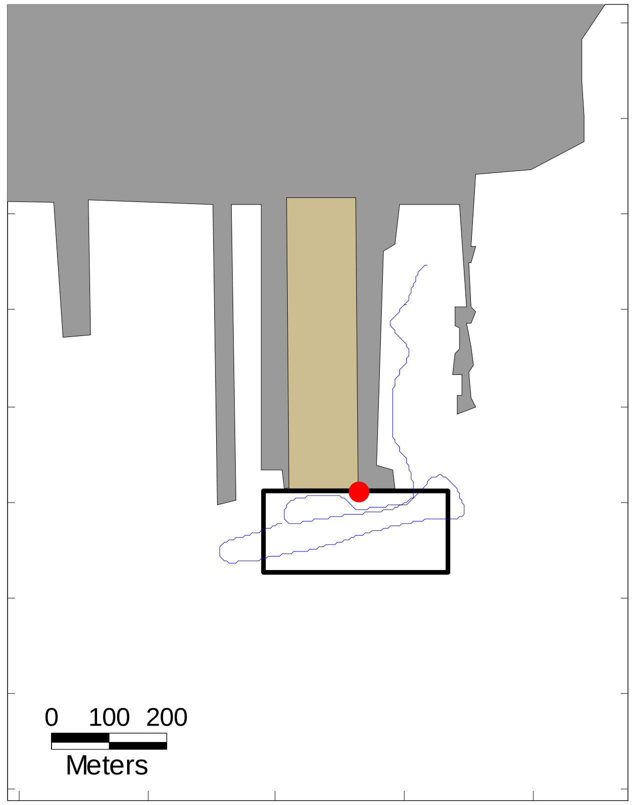


Figure 8. Example MESC transect used to map out dye distributions generated by Pump Well 6. The transect typically started at the southeast end and ended up at near the discharge location. The circle identifies the location of the intake hose for the stationary fluorometer measurements. The boxed region was used to calculate average dilution values for each transect.

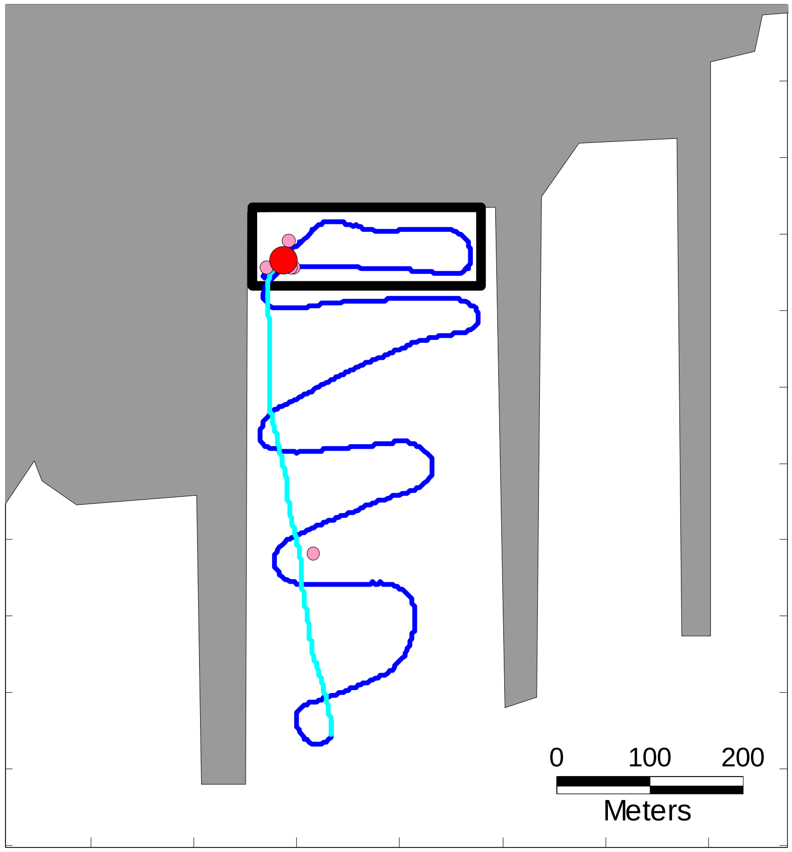


Figure 9. Example MESC transect used to map out dye distributions generated by Pump Well 4 during Runs 3 and 3A. The transect typically began near the discharge "boil" region and finished with a south to north tow-yo track back to the "boil" as shown in cyan. The large circle identifies the location of the intake hose for the stationary fluorometer measurements. The small circles identify vertical profile locations. The boxed region was used to calculate average dilution values for each transect.

Dry Dock 6

Submerged Tow Package

Figure 10. Photo of Mini-MESC water quality data acquisition system aboard the shipyard vessel MVC-032F in front of Dry Dock 6. The towed sensor package is shown being towed just below water surface at the bow.

RESULTS

Pump Well Discharges

The measured pump well flow rates for Pump well 6 and 4 averaged about 16,000 and 7500 gpm, respectively (Table 3). Pumping rates were very consistent throughout each of the Runs with relative standard deviations (RSD) of 3.9% and 3.5% for Runs 1 and 3/3A, respectively. Flow rate variations for first two pump cycles during Run 2 (Pump Well 6) were within a few percent of each other but the third pump volume was considerably lower resulting in an overall RSD of 18.6% for the three runs. The concentration at the point of discharge would therefore have been about 30% higher for that particular cycle. The average cycle time for each of the pump wells was also very consistent throughout the study. Pump well 6 had an average pump cycle time that was on for 06:26, off for 32:37 with a total cycle time of 39:37 ± 3%. The cycle time for Pump well 4 was on for 1:06:53, off for 2:21:51 with a total cycle time of 3:28:44 ± 5%. Because of the high consistency of the pump well discharge data (with one exception) the average discharge rate was used in all dilution calculations.

Dye Calibrations

Fluorescence calibrations were run during the study to determine the absolute dye concentrations measured in the field sampling as well as to validate the starting dye batch concentration for each Run. An example of a calibration regression plot is shown in Figure 11. The average starting dye concentration measured volumetrically ranged between 96.9 and 102.7% and averaged 99.5% (N=6) of the values measured fluoremetrically. Based on the close agreement between both measurement techniques, the concentration value based on volume was used when calculating initial dye concentrations of the initial dye batch. The starting dye values are shown in Table 3.

Dye Concentration at the Point of Discharge

As described previously, dye concentration at the point of discharge was calculated using the starting dye batch concentration and the relative pumping rates of the dye and pump well through the discharge pipe. The dye concentration at the point of discharge ranged from 26.3 to 65.2 ppb (Table 3). These concentrations were calculated for each run using the average pump well discharge rate, the starting dye batch concentration determined volumetrically, and the measured flow rate of dye to the discharge pipe. An assumption in the calculations was that the dye mixed completely within the pipe prior to its average pump well discharge rate, the starting dye batch concentration based on volume to the inlet. Dilution levels were calculated by dividing the concentration at the point of discharge by the concentration observed in the receiving environment during each run.

The dye and groundwater mixture discharging to the inlet from Pump Well 6 had an average salinity of 20.4 psu, temperature of 14.0, and a density of 14.94 sigma-t. The same parameters measured in Pump Well 4 were 18.6, 18.2, and 12.32 sigma-t. The density of the discharge water was less than that found in the receiving water and resulted in buoyant plumes.

Table 3. Pump well discharge rates, dye pump rates, and calculated dye concentrations of the starting mixture and at the point of discharge.

RUN	1	2	3/3A
Pump Well	6	6	4
Ave Discharge Pump Rate (gpm)	16,548	15,537	7,583
Pump Rate RSD	3.9%	18.6%	3.5%
Dye Pump Rate (gpm)	0.38	0.38	0.16
Amount of Dye/Water in Starting Mixture (L)	0.3/90	0.6/90	0.6/90
Starting Dye Concentration (mL Dye/ mL solution)*	0.00133	0.00267	0.00267
Ave Dye Dilution in pipe	2.30E-05	2.45E-05	2.08E-05
Dye Concentration at Discharge (ppb)	26.3	65.2	55.9

* Concentrated dye is a 40% solution

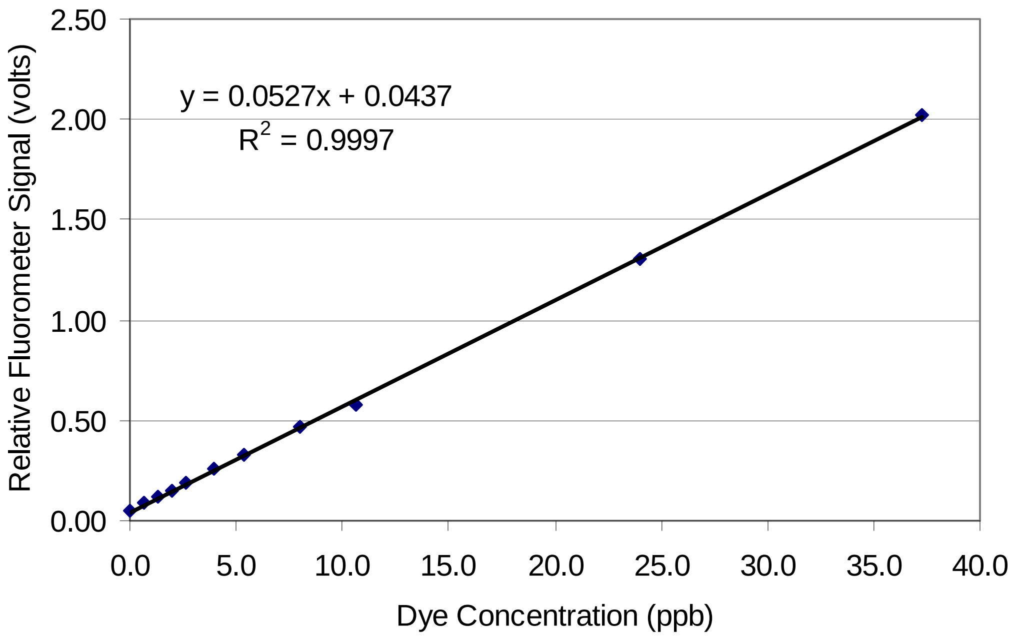


Figure 11. Fluorescence signal as a function of dye concentration for sample collected during Run 3A (Pump well 4) using the *in situ* fluorometer. The sample was diluted 1:100 prior to analysis.

Receiving Water Dye Distributions

Pump Well 6

Stationary Fluorometer Run1. Fluorescence data collected on the stationary fluorometer during Run 1 at Pump Well 6 are shown in Figure 12. Peak dye concentrations during each discharge ranged from about 12 to 17 ppb. There was a slight increase in peak concentrations over time from about ~09:30 to ~13 :30 (data earlier than 0930 were lost as a result of a computer lockup). During this time frame, the tide was ebbing (Figure 12). This increase during the ebb tide may have been a result of less water to dilute with the buoyant discharge plume. Dye levels increased quickly during the pump discharge cycle as shown in Figure 12 (red lines). Dye concentrations dropped off back to background levels about 30 minutes after completion of each pumping cycle though there appeared to be a slight build up in the background concentration of dye toward the end of the measurement period to about 5 ppb. The minimum dilution factor measured during Run 1 from Pump Well 6 at this location was roughly 1.5 (26.3/17).

Stationary Fluorometer Run 2. Fluorescence data collected on the stationary fluorometer during Run 2 at Pump Well 6 are shown in Figure 13. Peak dye concentrations during each discharge ranged from about 25 to 40 ppb. Peak concentrations increased slightly through the time period with maximum levels observed with the flood tide condition (Figure 13). There was a build up in the background concentration during this time period as well to ~ 12 ppb. Dye concentrations again increased quickly after the start of the pumping cycle and dropped off to background levels in about 30 minutes at the completion of each pump cycle. Both the peak concentrations and background levels dropped back down toward the end of the measurement period. The minimum dilution factor measured during Run 2 at Pump Well 6 was 1.6 (65.2/40). There was excellent agreement in the minimum dilution level measured over the two runs even when the dye discharge rates were different by a factor of ~2.5.

A vertical profile of dye made at the intake location of the stationary fluorometer indicated that the plume was confined to the top meter of the water column. The vertical profile was made by lowering the intake hose and recording the relative fluorescence signal. The fluorescence signal of 0.16V at the surface dropped by a factor of about four to 0.045 V at 0.6 m and by a factor of 5 (0.035V) at 1.2 m.

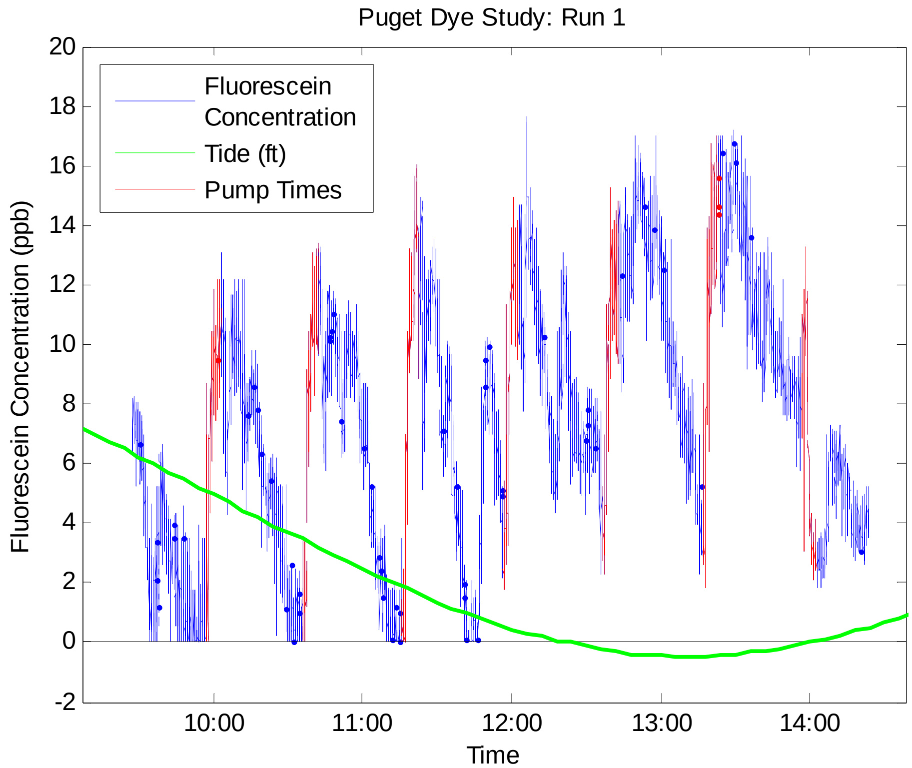


Figure 12. Fluorescence dye data from stationary fluorometer measured adjacent to the initial discharge plume from Pump Well 6, Run 1. Tide data are shown in green. The fluorescence signal during the pump discharge times is shown red.

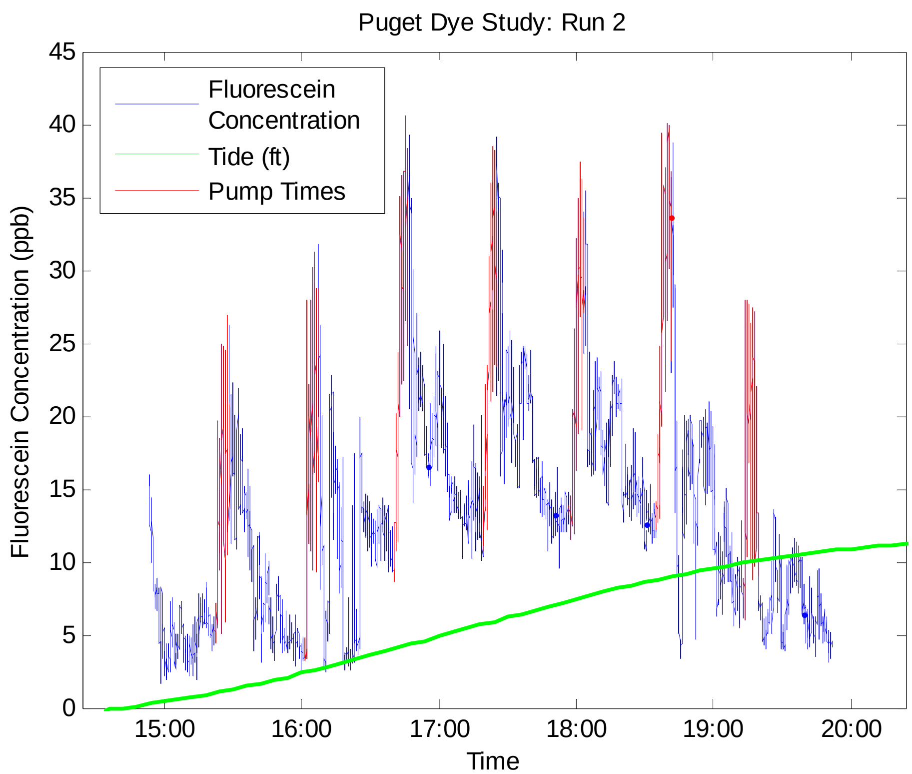


Figure 13. Fluorescence data from stationary fluorometer measuring dye adjacent to the initial discharge plume from Pump Well 6, Run 2. Tide data are shown in green. The fluorescence signal during the pump discharge times is shown red.

Spatial Mapping Run 1. Figure 14 through Figure 16 show example dye distributions mapped during Run1. Spatial maps for all 13 transects generated during Run 1 can be found in Appendix A. Dye plumes typically formed up in two regions where the discharge flow opened up from under the pier structure. One region was the area east of Pier 9 that was in line with the outfall flow direction under the pier (a strong eastward discharge flow under the pier was clearly seen on each pump run). There was also a region of dye that moved south of the pier at the location where the pier structure opened up from a solid wall to a series of pier pilings. This was also where the stationary fluorometer intake was located. Dye concentrations dropped off very quickly from the pier region outward and typically reached near background concentrations within 100 m of the pier. Various obstructions such as piers, permanently moored vessels, cables, and floating barriers (Figure 17) limited transect distances to both the east and south so in some instances, background levels were not observed in all directions away from Pier 9.

The variability in the distribution and concentration of dye observed on each transect was primarily a result of reaching the plume region at different times in the pumping cycle. There was also a slight variation that could be attributed to the changing tide condition as was shown by the stationary fluorometer results.

The maximum dye concentrations observed during all survey transects during Run 1 was 6 ppb. The region of maximum dye was typically found within about 50 m of the Pier in a relatively small patch. This maximum concentration corresponded to a minimum dilution factor of 4.4 (26.3/6). Dilution levels quickly reached between factors of 100 and 1000 as can be seen in Figure 18 and Figure 19. The average dilution factor calculated for all transect data within the approximately 150 x 300 m boxed region shown in Figure 8 was 965 ±11%. This was done by averaging all surface data collected within the box on each transect.

Spatial Mapping Run 2. Figure 20 and Figure 21 are example dye distributions mapped during Run2 at Pump Well 6. Spatial maps for all 15 transects generated during Run 2 can be found in Appendix B. Dye plumes were very similarly distributed to that seen in Run 1 with two regions of maximum plume concentrations. Dye concentrations dropped off quickly with distance away from the pier, though the plume size was a bit larger than observed during Run 1. Background concentrations were typically observed within 100 m of the pier. Again, various obstructions limited transect distances so that in some instances, background levels were not reached in all directions away from the discharge. Variability in the distribution and concentration of dye observed on each transect were again a result of reaching the plume region at different times in the pumping cycle but tidal effects seemed to play a larger role on this run. Effects of the tide can be seen with the dye plume spreading south during flood tide from Transect 8 through 15. The spreading to the south was opposite of the expected flood tide flow but appears to be a common phenomenon (Bill Bouchard, PSNS, personal communication, 2004).

A set of vertical profiles was run about 3 to 4 m away from the hose intake location to assess the depth distribution of dye as well as the water column distribution of salinity, temperature, and density. Example plots of these data are shown in Figure 22 and Figure 23 though all profile data are included in Appendix C. Dye was found in only the top 1 to 1.5 m of the water column. Concentrations decreased rapidly with depth. On Vertical 3, made while dye was discharging, the concentration dropped from ~60 to 5 ppb in the first 1.5 m of the water column. Typical salinity, temperature, and density values of surface water measured on both runs were ~28.5 psu, ~11 deg C, and ~21.5 sigma-t. With a density of ~15 sigma-t, the discharge water was clearly buoyant resulting in a surface plume soon after its entry into the receiving environment and at the stationary fluorometer observation point under Pier 9. A density minimum observed at 1.5 m was a result of the dry dock water discharge.

The maximum dye concentrations observed during all survey transects during Run 2 was 6 ppb. This maximum concentration corresponded to a minimum dilution factor of about 11 (65.2/6). Dilution levels quickly reached between factors of 100 and 1000 as can be seen in Figure 24 and Figure 25. The average dilution factor calculated for all transect data within the approximately 150 x 300 m boxed region shown in Figure 8 was 970±51%. This dilution factor was virtually the same as that observed during Run 1 though the variability was considerably higher as a result of the tidal spreading. Calculating the same dilution factor for both Run 1 and 2 under opposite tide conditions and with significantly different starting dye levels indicates that the plumes were well sampled.

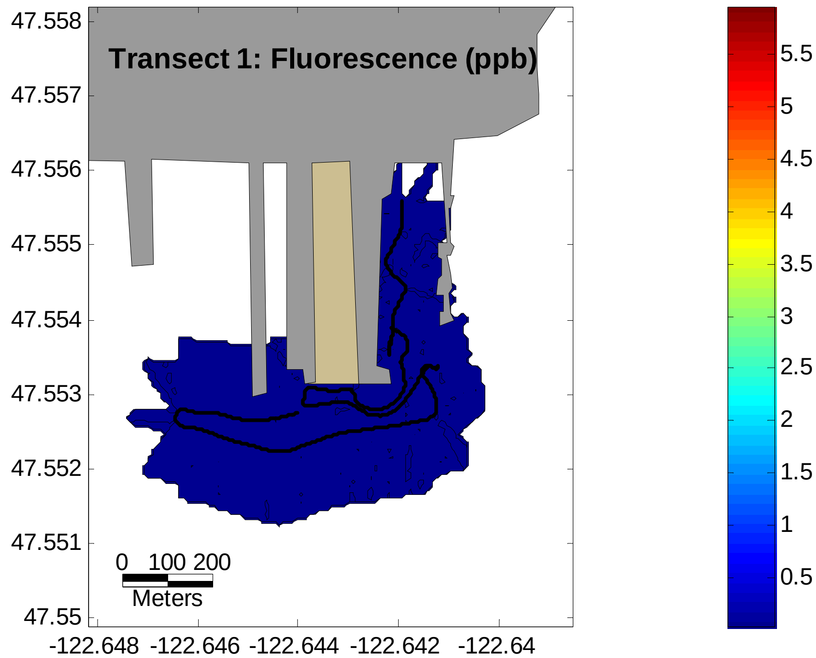


Figure 14. Spatial distribution of dye concentrations on Transect 1 during Run1 at Pump Well 6. Transect 1 shows the background fluorescence levels prior to the discharge of dye.

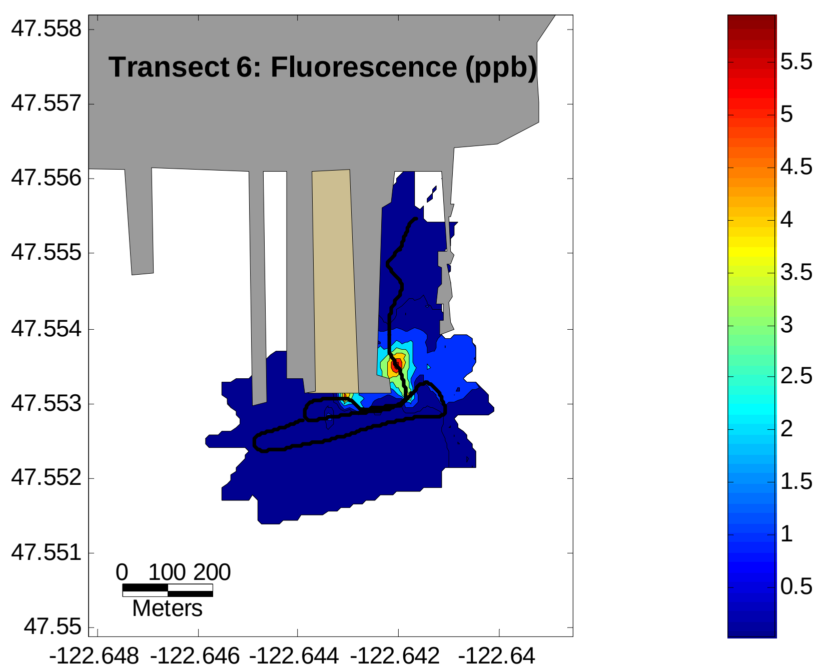


Figure 15. Spatial distribution of dye concentrations on Transect 6 during Run1 at Pump Well 6. The peak concentration of dye was observed just to the east of the pier, where the discharge flow was directed.

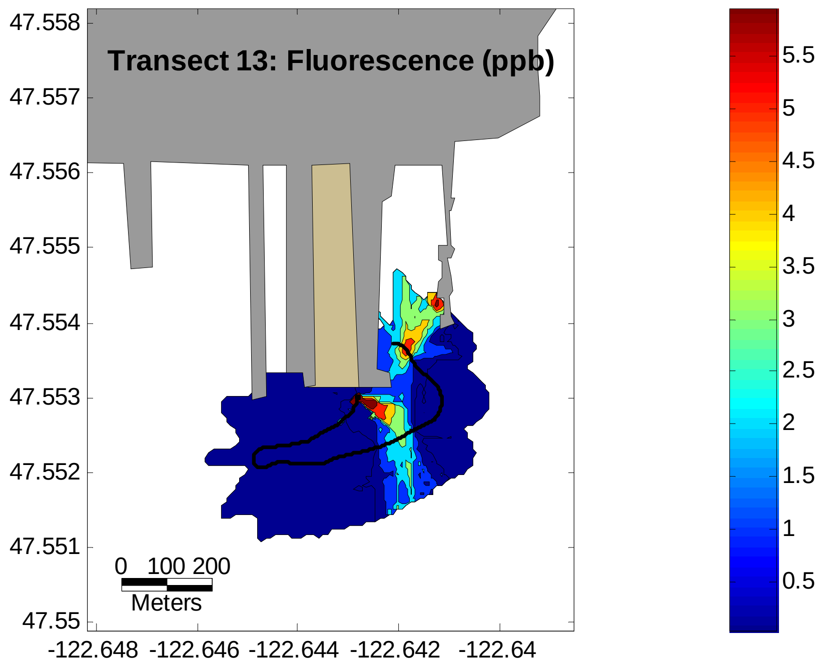


Figure 16. Spatial distribution of dye concentrations on Transect 13 during Run1 at Pump Well 6. Peak dye concentrations were observed at two locations, to the south where the pier opened from a solid wall to pier pilings and to the east of the pier.

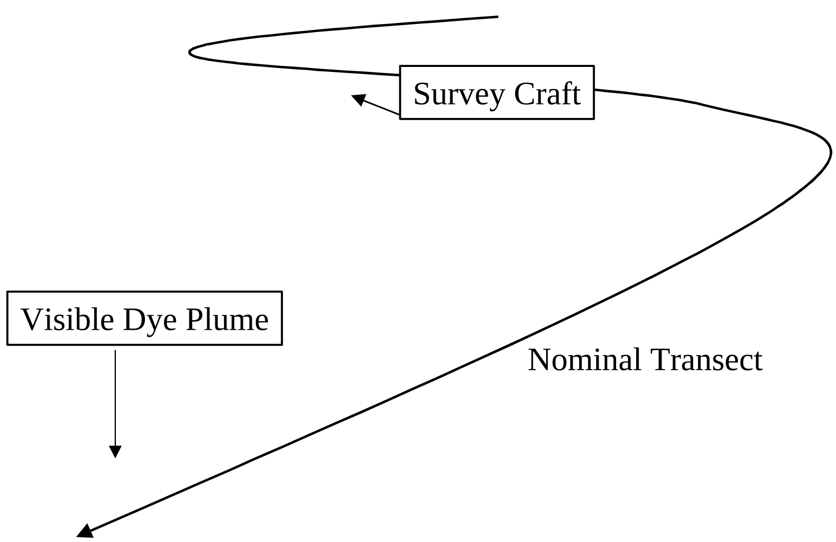


Figure 17. Photo of Mini-MESC performing survey track on the east side of Pier 9 during Run 1 at Pump Well 6. The picture was taken from the southeast end of Pier 9 looking north.

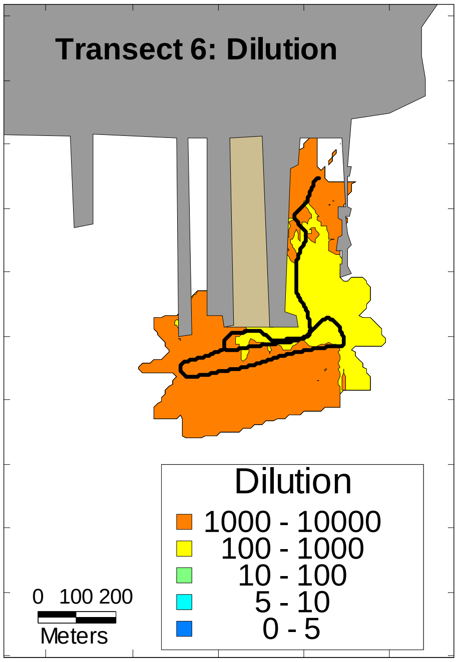


Figure 18. Dilution levels measured for Transect 6 during Run1 at Pump Well 6.

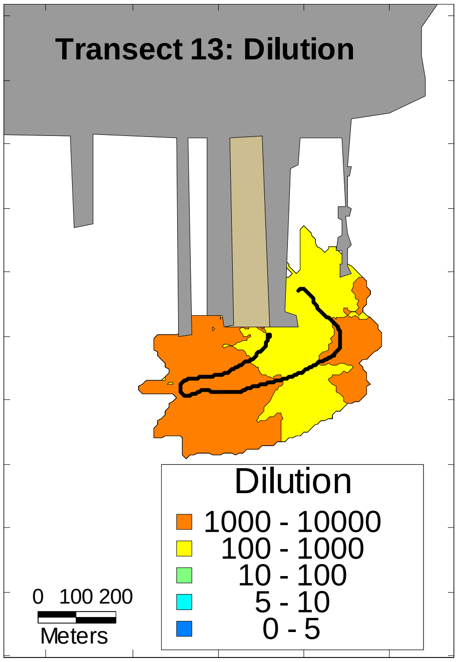


Figure 19. Dilution levels measured for Transect 13 during Run1 at Pump Well 6.

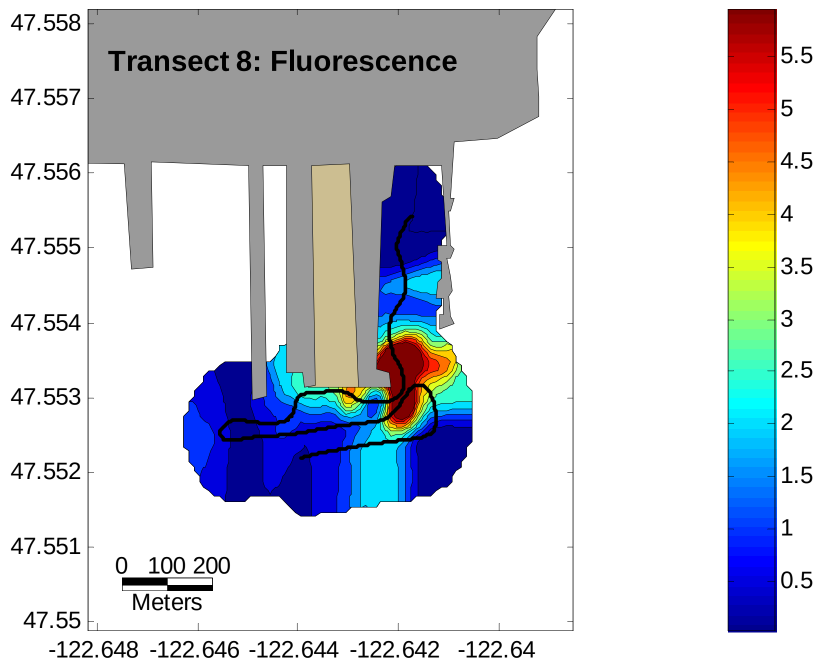


Figure 20. Spatial distribution of dye concentrations on Transect 8 during Run2 at Pump Well 6. The peak concentration of dye was observed just to the east of the pier, where the discharge flow was directed.

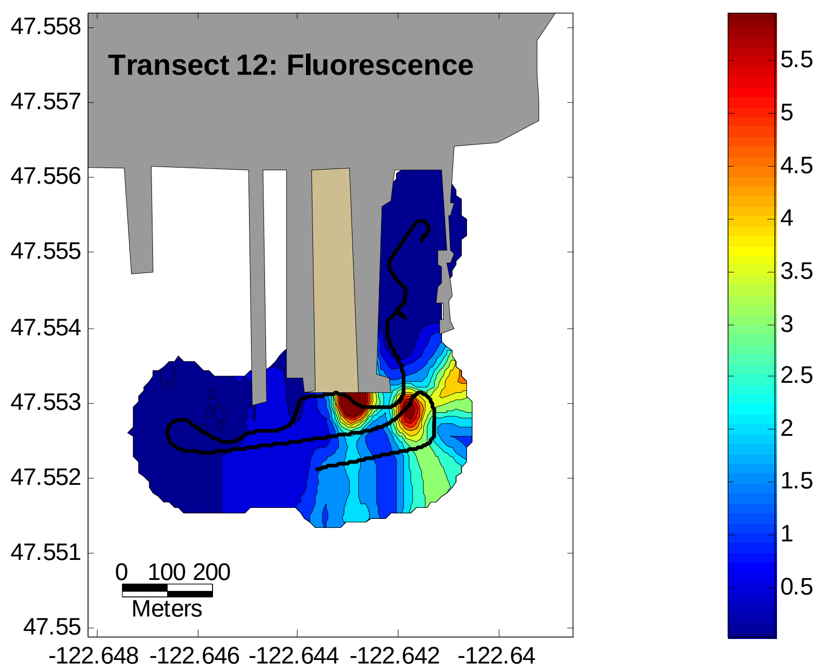


Figure 21. Spatial distribution of dye concentrations on Transect 13 during Run1 at Pump Well 6. Peak dye concentrations were observed at two locations, to the south where the pier opened from a solid wall to pier pilings and to the east of the pier.

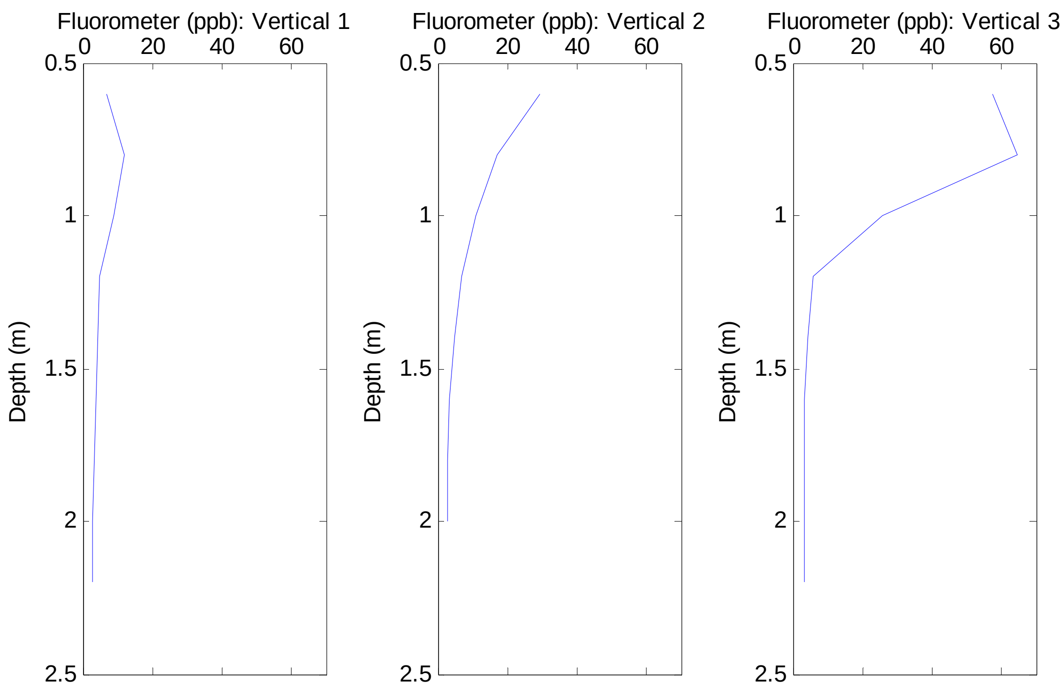


Figure 22. Vertical profiles of dye adjacent to Pier 9 near to the location of the stationary fluorometer intake (Figure 8).

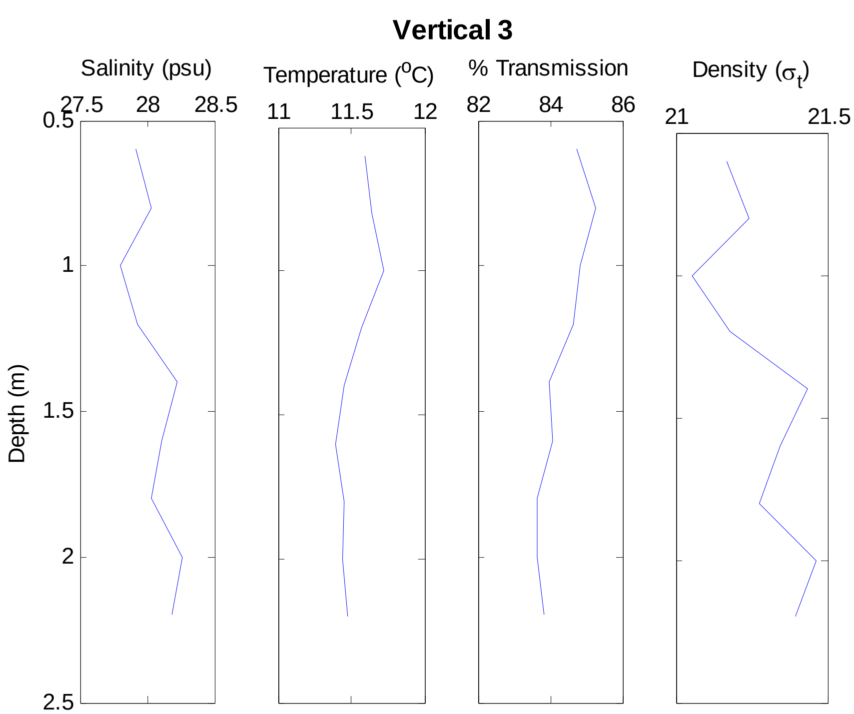


Figure 23. Vertical profiles of salinity, temperature, light transmission and density adjacent to Pier 9 near to the location of the stationary fluorometer intake (Figure 8).

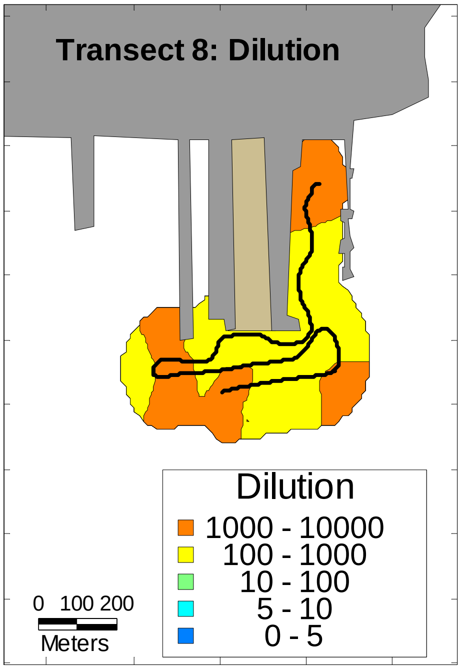


Figure 24. Dilution levels measured for Transect 8 during Run 2 at Pump Well 6.

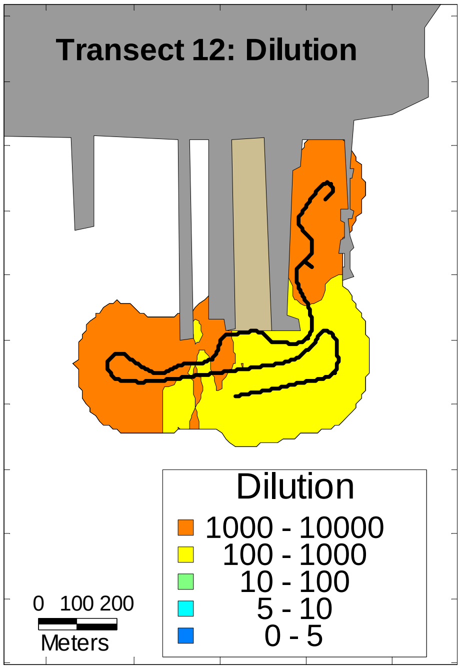


Figure 25. Dilution levels measured for Transect 12 during Run 2 at Pump Well 6.

Pump Well 4

Stationary Fluorometer Run 3 and 3A. Run 3 at Pump Well 4 was conducted on 26 April and was followed by Run 3A through the evening and into the morning of the 27th. One goal of the overnight run was to observe whether or not there was a build up of dye through the high tide condition overnight. Fluorescence data collected on the stationary fluorometer during the two runs are shown in Figure 26 and Figure 27. Peak dye concentrations increased after the first pump cycle of the time period suggesting there might be a slight time delay for dye to buildup to its full level in the discharge though once the peak level was reached, it remained fairly constant for the remaining pump cycles. Peak dye concentrations during both runs were between 7 and 8 ppb. Dye levels increased quickly during the pump discharge cycle and dropped to near background during the next hour once the pump stopped. There was a slight build up in the background concentration of dye to about 4 ppb. The minimum dilution factor observed during these runs was 7 (55.9/8). The significantly greater dilution of the discharge plume at Pump Well 4 than that observed at Pump Well 6 was a result of measuring further out from the pipe exit point.

Spatial Mapping Run 3 and 3A. Example dye distributions mapped during Run 3 and 3A are shown in Figure 28 through Figure 33. Spatial maps for all 18 transects generated during Run 3 and the 4 collected on Run 3A can be found in Appendix D and G. A visible dye plume formed up at the surface about 30 m out from the quay wall in the location of the stationary fluorometer intake. Dye concentrations dropped off very quickly from this initial dye plume region and commonly reached near background concentrations within ~100 m. Dye levels were rarely above the background condition past the halfway point along the piers.

The variability in the distribution and concentration of dye observed on each transect was primarily a result of reaching the plume region at different times in the pumping cycle. On several occasions a whole transect was collected between pump cycles and concentrations everywhere were back to background (Figure 30). There was also some variation as a result of tidal mixing (Figure 29). On Run 3A, dye was found preferentially along the western side of the discharge region, presumably as a result of mixing within the ebb flow (Figure 32 and Figure 33).

The maximum dye concentration observed during all survey transects during Runs 3 and 3A 1 was 6 ppb. This maximum concentration corresponded to a minimum dilution factor of ~9 (55.9/6). Dilution levels quickly reached between factors of 100 and 1000 as can be seen in Figure 34 and Figure 35. The average dilution factor calculated for each transect within the approximately 150 x 300 m boxed region shown in Figure 9 for both runs ranged between 225 and 3200 and averaged ~1200. The large range in values was a result of the relatively long time between pump cycles leading to the collection of data both during and after pump cycles.

A set of seven vertical profiles were collected in the boil region as well at one location about half-way out along the piers (Figure 9) on Run3 and another 3 were collected on Run 3A. Example profiles are shown in Figure 37 and Figure 38 with the complete set shown in Appendix E and H. Dye was found primarily in the top 2 m of the water column and typically decreased with depth. Maximum levels were about 6 ppb, dropping to

about 1-2 ppb by about 4 m. The 2 ppb concentration represents a dilution factor of about 28. In a couple of instances, the maximum dye concentration was found at mid-depth (3 to 5 m) though at concentrations lower than the maximum 6 ppb level observed near the surface. The drop off of dye with depth resulted from the buoyancy of plume water having a density nearly half of the inlet water. A decrease in surface density as a result of considerably warmer, less saline plume water can be seen clearly in Figure 38.

Tow-yo data were collected along the south to north transect shown in cyan in Figure 9. The tow-yos were run between the surface and about 1.5 m to look at plume thickness. Example plots are shown in Figure 39 and Figure 40 with all the plots for transects 5 through 18 for Run 3 and transects 1 through 3 for Run 3A shown in Appendix F and I. The tow-yos showed that the vertical distribution of dye was typically confined to the top 0.5 m of the water column except when in the "boil" region (Figure 40). There were also some relatively small patches of dye seen away from the "boil" area but at levels typically below 4 ppb. The tow-yo data confirm the spatial distribution data collected at the surface and at individual vertical profiles.

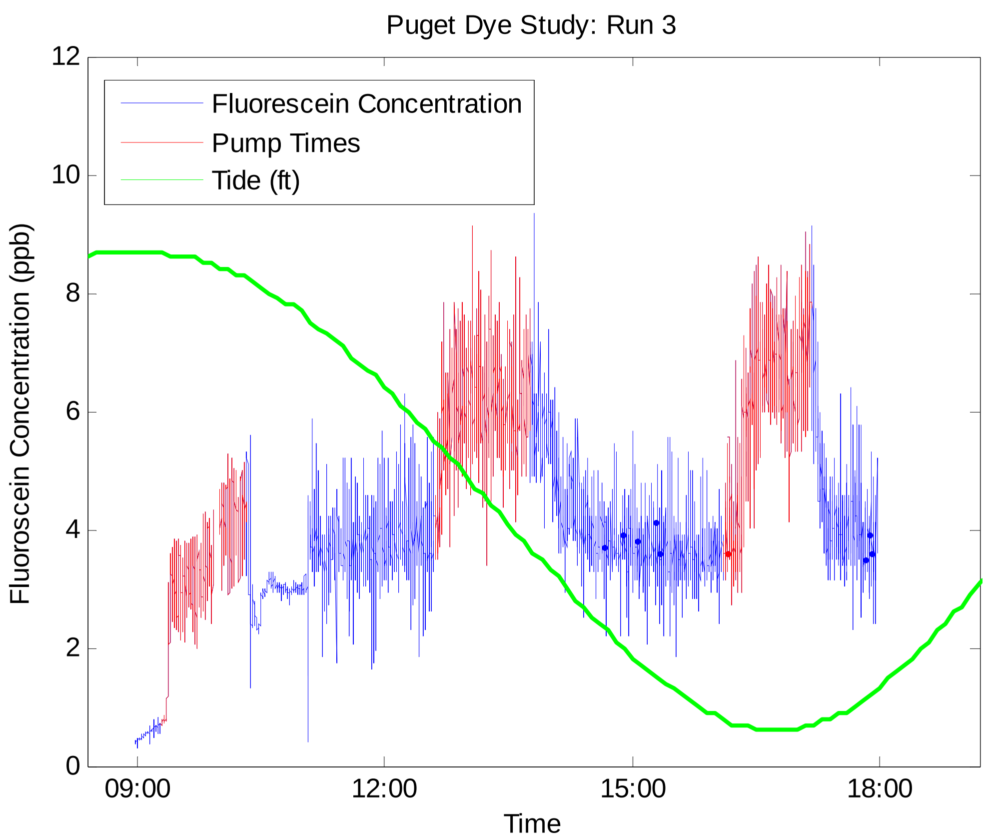


Figure 26. Relative dye fluorescence signal from the stationary fluorometer measured inside the initial discharge plume from Pump Well 4, Run 3. Tide data are shown in green. The fluorescence signal during the pump discharge times is shown red.

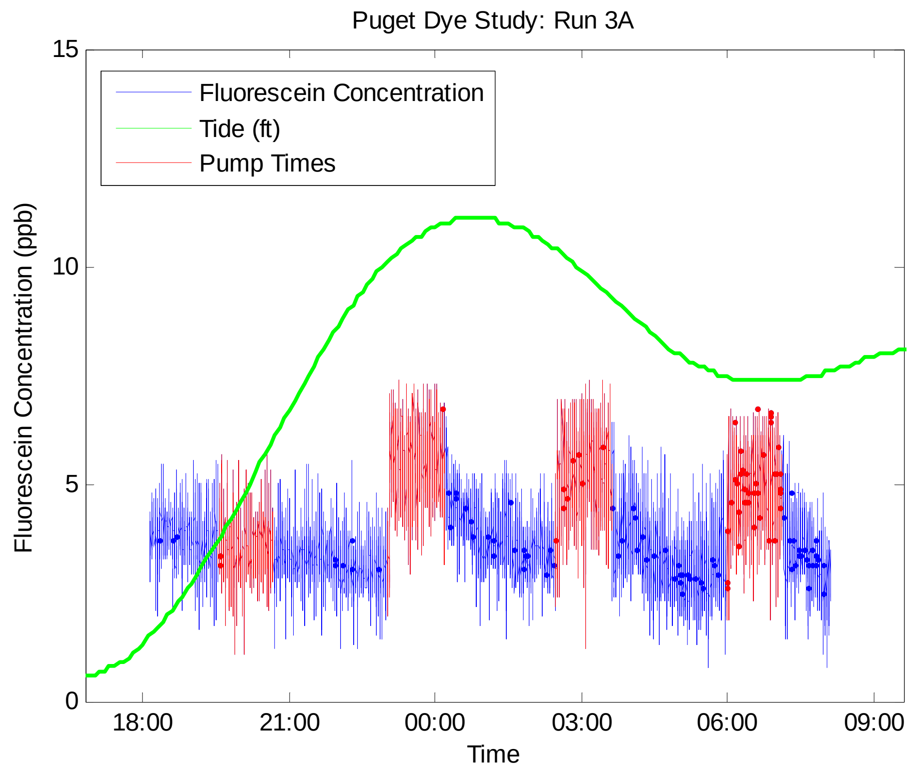


Figure 27. Fluorescence dye data from stationary fluorometer measured inside the initial discharge plume from Pump Well 4, Run 3A. Tide data are shown in green. The fluorescence signal during the pump discharge times is shown red.

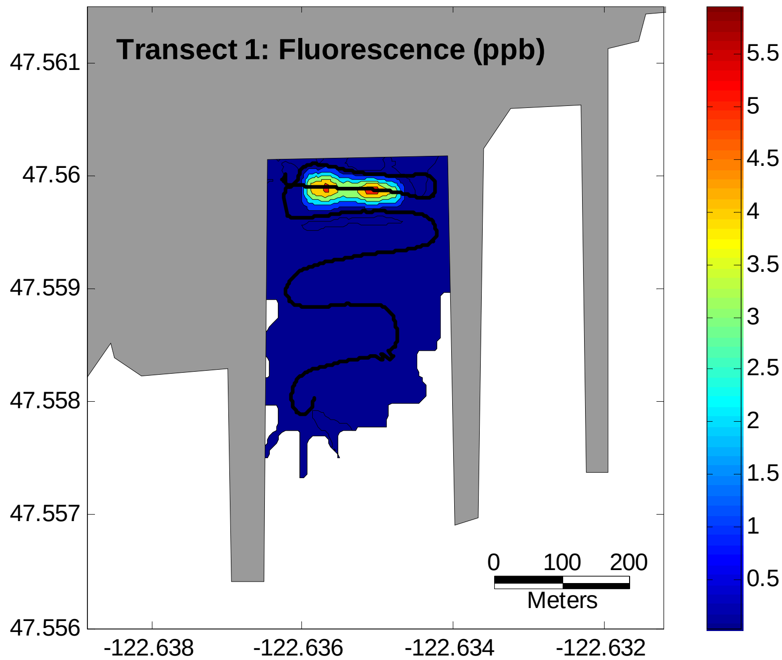


Figure 28. Spatial distribution of dye concentrations on Transect 1 during Run3 at Pump Well 4. Peak dye concentrations were observed where the plume surfaced about 15 m away from the quay wall.

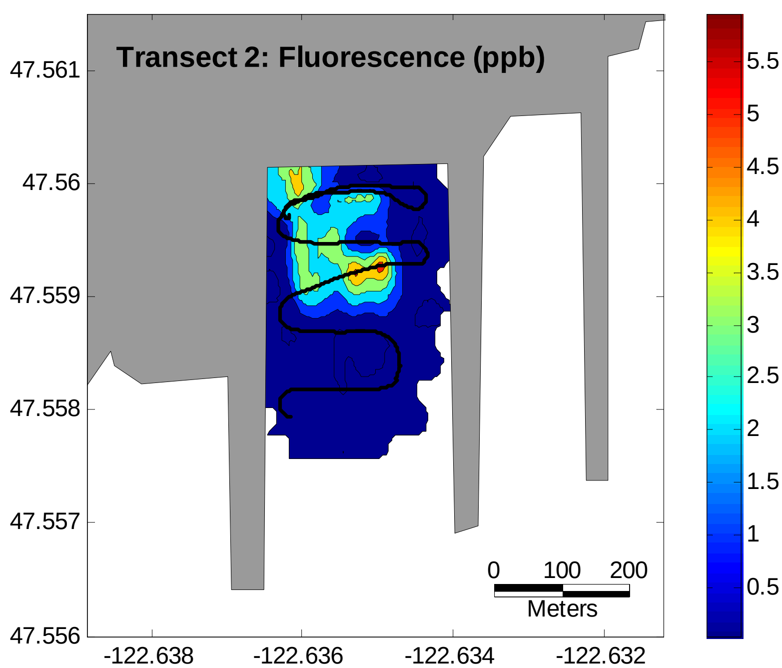


Figure 29. Spatial distribution of dye concentrations on Transect 2 during Run3 at Pump Well 4. This distribution shows dye moving southward.

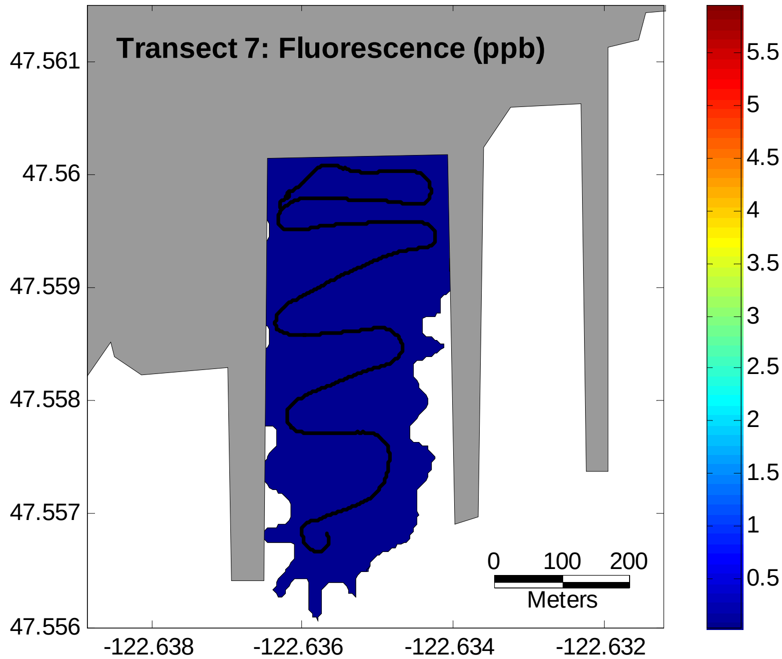


Figure 30. Spatial distribution of dye concentrations on Transect 7 during Run3 at Pump Well 4. This transect was run when between pumping when the dye concentrations had dropped back to background.

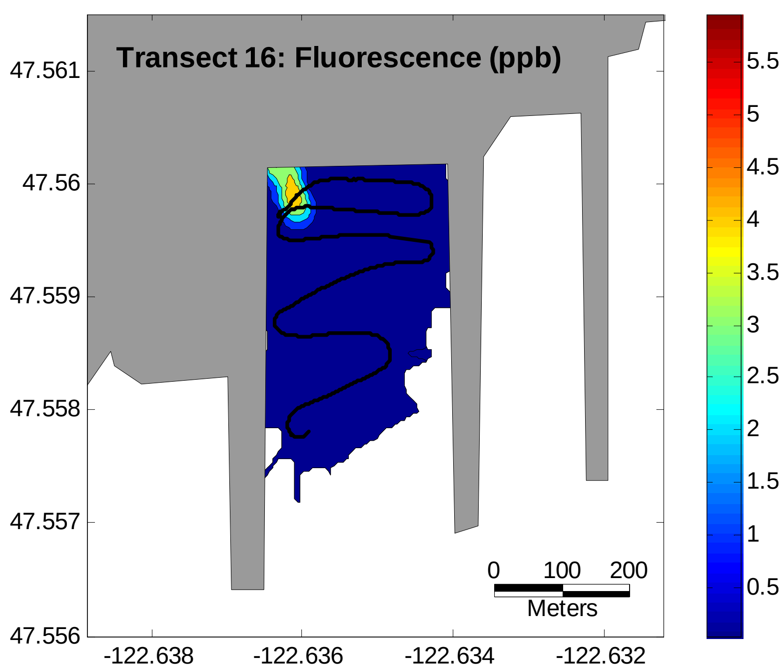


Figure 31. Spatial distribution of dye concentrations on Transect 16 during Run3 at Pump Well 4. Peak dye concentrations were observed where the plume surfaced about 15 m away from the quay wall.

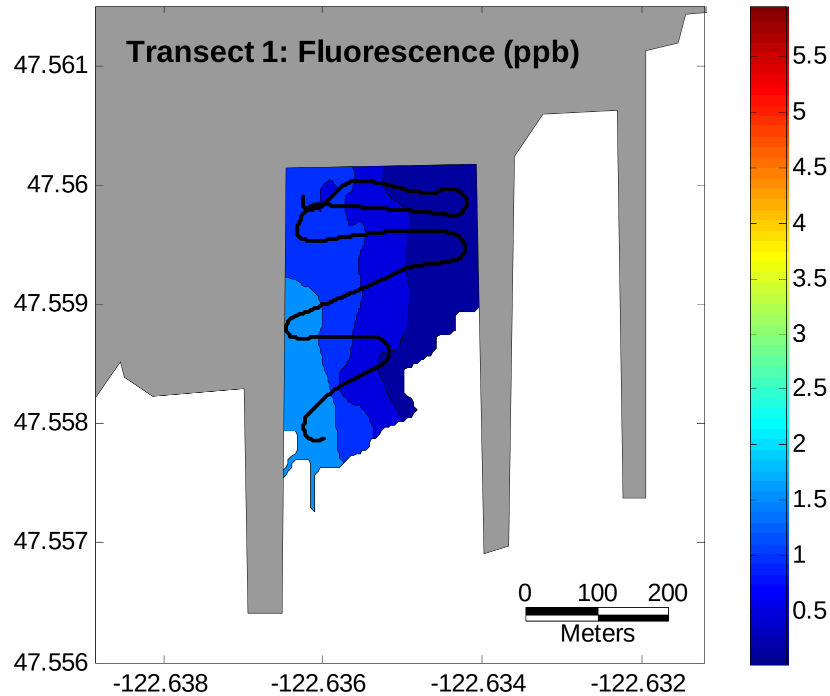


Figure 32. Spatial distribution of dye concentrations on Transect 1 during Run3A at Pump Well 4.

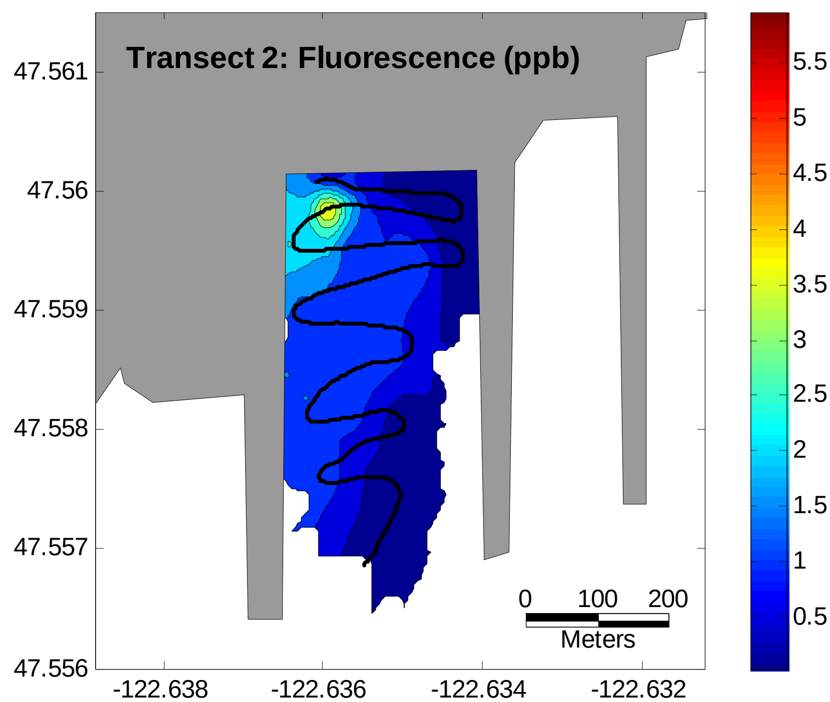


Figure 33. Spatial distribution of dye concentrations on Transect 1 during Run3A at Pump Well 4.

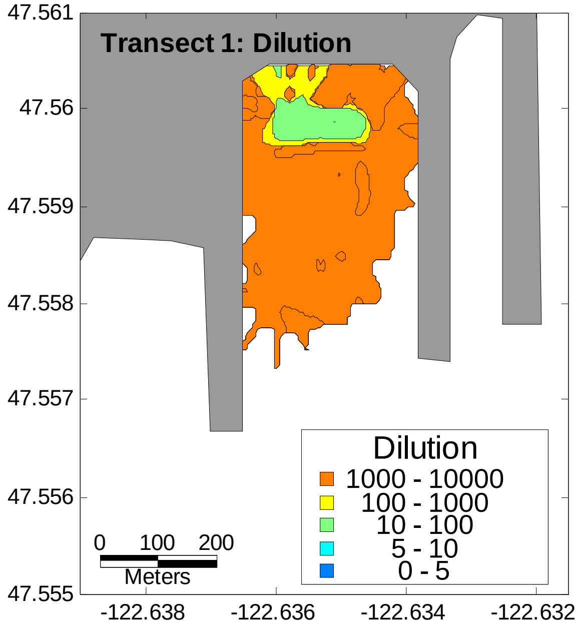


Figure 34. Dilution levels measured for Transect 1 during Run 3 at Pump Well 4.

Figure 35. Dilution levels measured for Transect 2 during Run 3 at Pump Well 4.

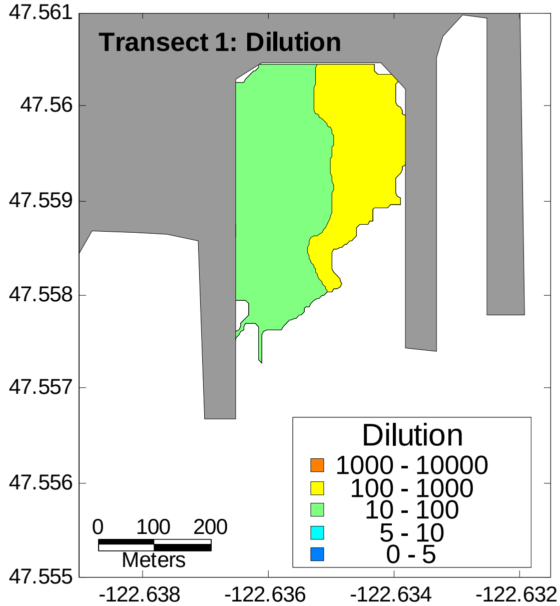


Figure 36. Dilution levels measured for Transect 1 during Run 3A at Pump Well 4. Dye was preferentially found on the western side of the discharge region.

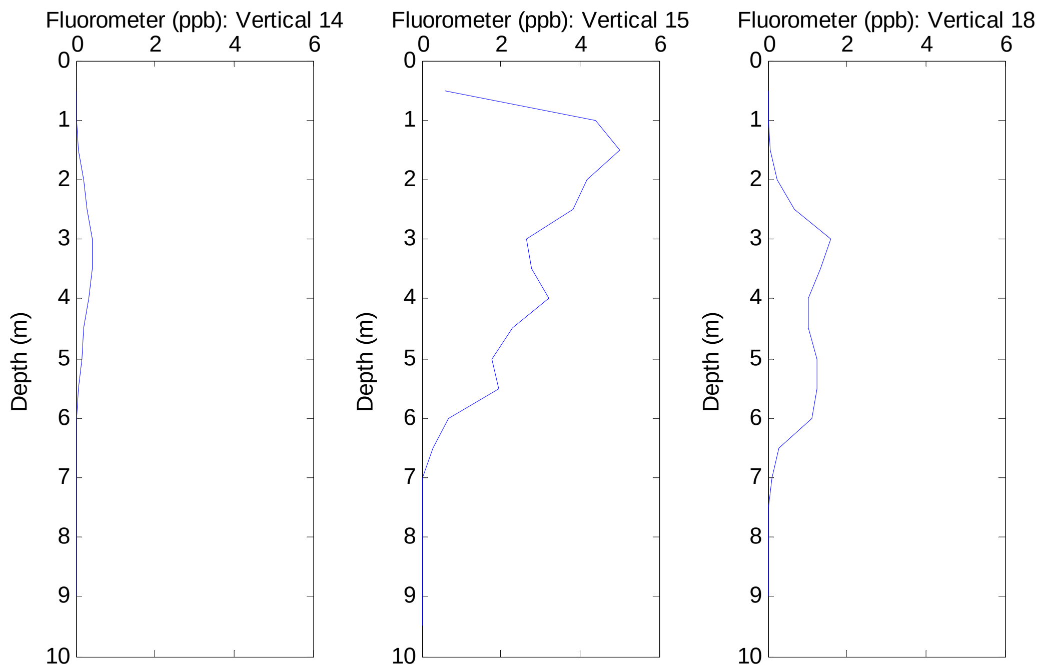


Figure 37. Vertical profiles of dye made in the plume "boil" region during Run 3. Significant dye concentrations were typically found in the top 2 m of the water column. Vertical number corresponds to transect number.

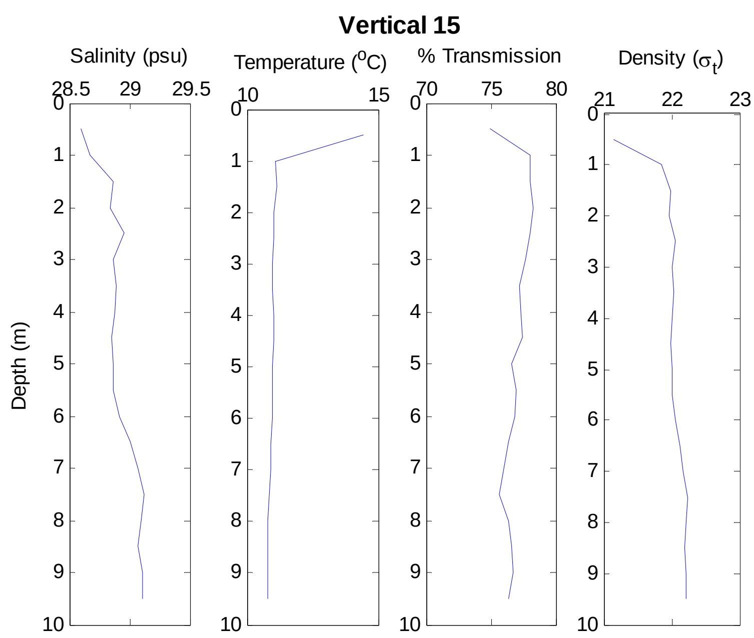


Figure 38. Vertical profiles of salinity, temperature, light transmission and density made in the plume "boil" region during Run 3.

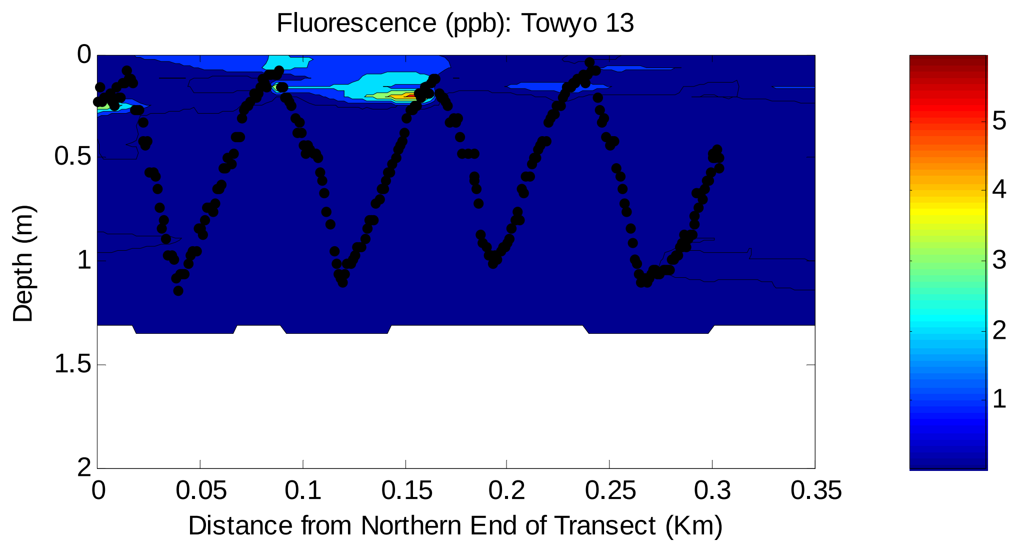


Figure 39. Fluorescence data as a function of depth along a transect run from south to north ending at the plume "boil" region. Tow-yo number corresponds to transect number.

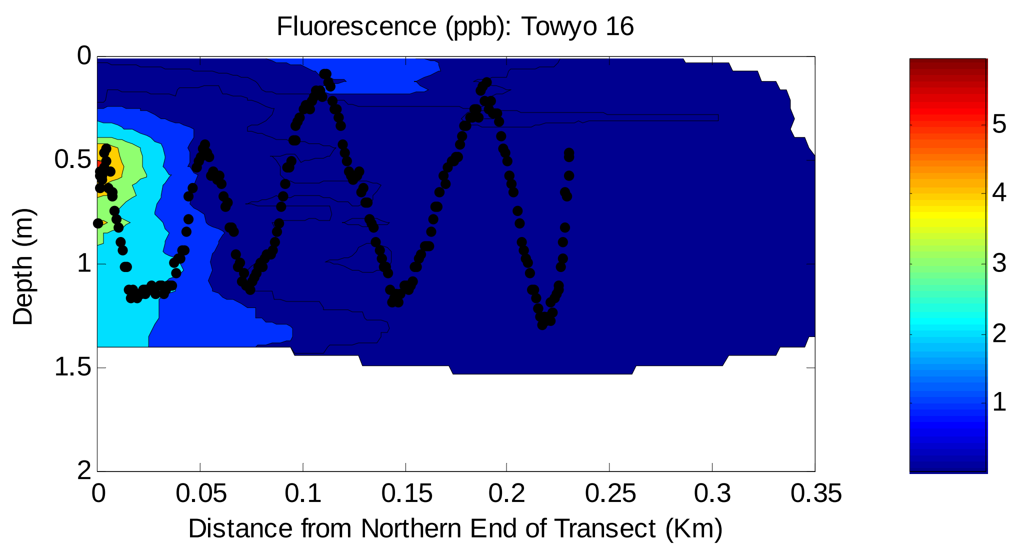


Figure 40. Fluorescence data as a function of depth along a transect run from south to north ending at the plume "boil" region.

Summary

The discharge and mixing of ground water from PSNS & IMF dry dock 6 and 4 into the adjacent waters of Sinclair Inlet was successfully mapped using a fluorescent dye tracer. Dye was mapped under normal dry weather operating conditions on both a flooding and ebbing tide at both dry docks. The discharge plumes rose to the surface relatively quickly after leaving the discharge pipe because of their lower density relative to the surrounding inlet water. Plume water reached the surface within several meters of its discharge from Pump Well 6 underneath pier 9. The plume surfaced about 30 m out from quay wall (~40 m from the end of pipe) from Pump Well 4. The increased distance away from Pump Well 4 was presumably a result of a higher discharge velocity through a special check valve unit.

The difference in where the plume surfaced affected the amount of dilution in the initial "boil". At Pump Well 6, the "boil" region was diluted by only a factor of 1.5 whereas the boil off Pump Well 4 was diluted by a factor of 7. However, there was a relatively quick and efficient mixing of the plumes at both locations once they reached the surface. Background levels were typically reached within 100 m or so of where the plumes surfaced. Dilution factors of between 100 and 1000 were reached while still within the confines of shipyard security boundary off Pump Well 6 and well within the confines of the piers off Pump Well 4. Average dilution factors in the boxed areas outside each outfall (Figure 8 and Figure 9) ranged between 200 and 1000.

While there was clearly some advective flow that mixed the plumes out from the “boil” region, the majority of the mixing occurred while spreading at the surface. In some instances the advective flow resulted in patchiness of the distribution but concentrations in those patches were considerably lower than measured in the initial "boil". The principal variability observed in the spatial distributions was a result of sampling at different stages in the pump cycle with only some of the variability attributed to tidal flow.

There was a slight buildup in background levels of dye with successive pump cycles in the immediate region of the surface"boil". However, there were clearly times when whole transects collected between pump cycles had dye levels at background. There was no clear relationship between tide stage and build up in background concentrations.

The study data should prove useful in validating numerical plume models such as MixZon Inc’s CORMIX or EPA’s PLUMES. These models can be used to address a variety of discharge and tidal conditions that might occur at these locations.

REFERENCES

ENVVEST 2002a. PSNS Project ENVVEST Technical Work Masterplan, of May 2002, prepared by PSNS Project ENVVEST Technical Steering Committee. https://swdata.spawar.navy.mil/envvest/tech_master_plan_06_f2_web2b.pdf

ENVVEST 2002b. Dye Release Study in Port Washington Narrows, Draft Sampling Plan. Prepared by PSNS ENVVEST CSO Modeling Subworking Group, Final Draft February 4, 2002. https://swdata.spawar.navy.mil/envvest/CSO_Dye%20Release%20Study%20Plan/Dye%20Release%20Study%20in%20Port%20Washington%20Narrows3.htm

Katz C.N, P.L. Noble, D.B. Chadwick, B. Davidson, and R.D. Gauthier. 2004. Sinclair Inlet Water Quality Assessment: Water Quality Surveys Conducted September 1997, March 1998, and July 1998. Prepared for Puget Sound Naval Shipyard Project ENVVEST. Space and Naval Warfare Systems Center, San Diego, CA. January 2004.

Matlock, L, 2003. Guidance Manual for Developing a Stormwater Pollution Plan for Industrial Facilities. Washington Department of Ecology, Water Quality Program, Revised April 1998, Publication No. WQ-R-93-015. http://www.ecy.wa.gov/biblio/93015.html

PSU, 2004. Portland State University 2004. CORMIX Methodology. http://www.cormix.info/methodology.php#3

Washington Administrative Code (WAC) 2003, Chapter 173-201A WAC, Water Quality Standards For Surface Waters Of The State Of Washington. http://www.ecy.wa.gov/biblio/wac173201a.html

WDOE, 1998 Washington State Department of Ecology 1998. Final 1998 Section 303(d) List -WRIA 15. http://www.ecy.wa.gov/programs/wq/303d/1998/wrias/wria15.pdf

WDOE, 2002. Water Quality Program Permit Writer's Manual. Department of Ecology, 92-109, Revised, 2002. http://www.ecy.wa.gov/biblio/92109.html

WDOE, 2004. Guidance for Conducting Mixing Zone Analyses. http://www.ecy.wa.gov/programs/eap/mixzone/mixzone.html

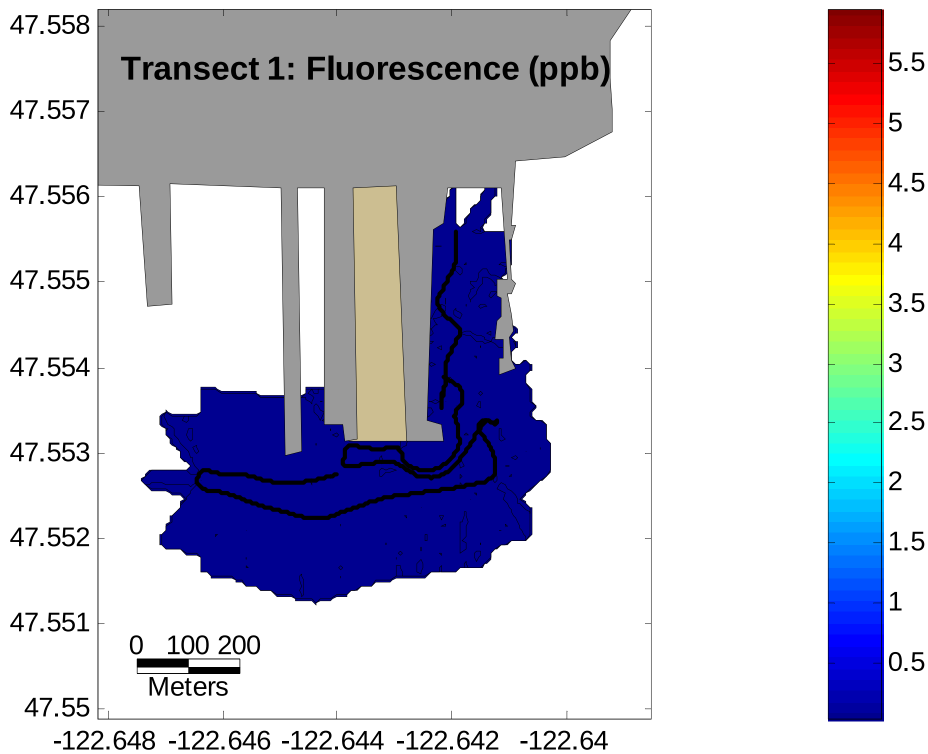
USEPA, 1991. U.S. Environmental Protection Agency 1991. Technical Support Document for Water Quality-based Toxics Control. Office of Water, EPA/505/2-90-001, March 1991.

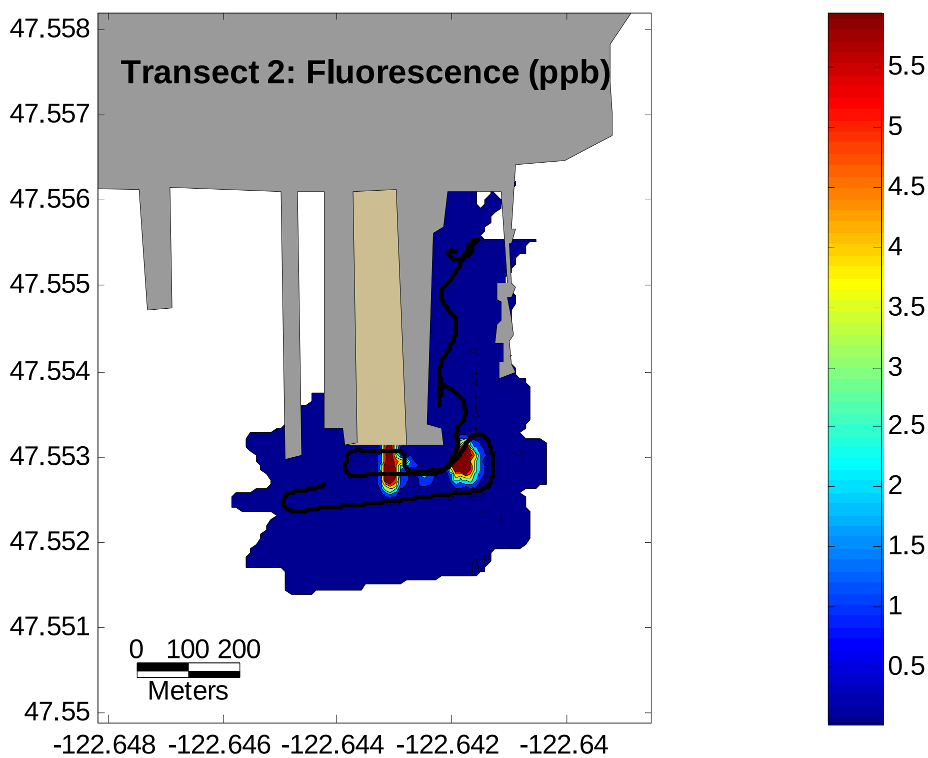
USEPA, 1994. National Pollutant Discharge Elimination System Waste Discharge Permit for Puget Sound Naval Shipyard, Bremerton, WA.

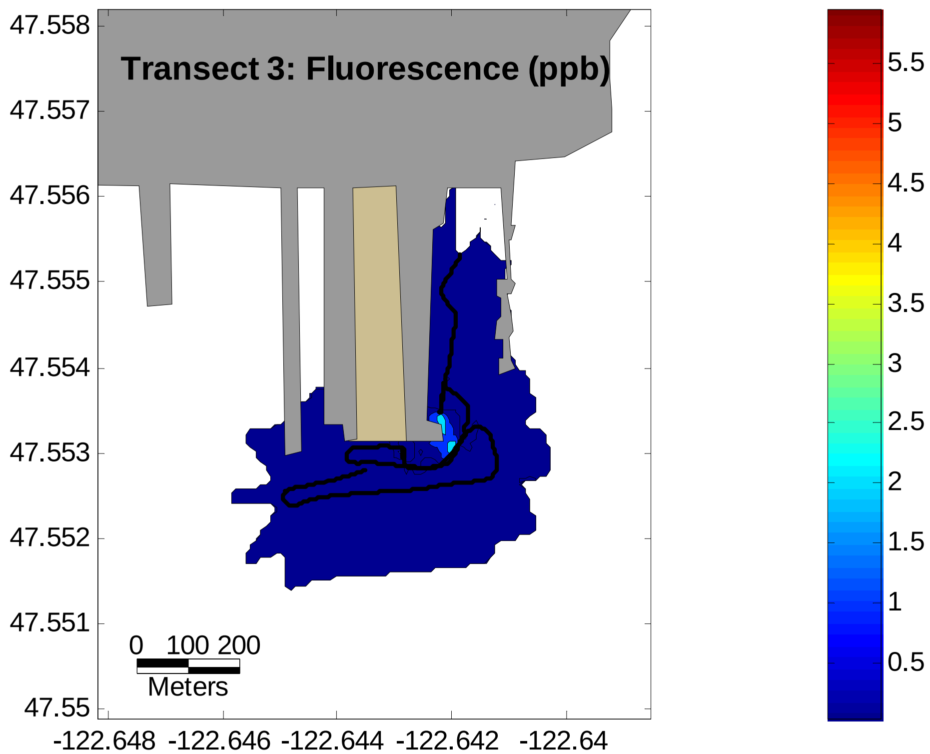
U.S. Navy, US EPA, and Washington State Department of Ecology 2000. Project ENVVEST: Phase I Final Project Agreement for the Puget Sound Naval Shipyard, September 25, 2000 [Federal Register: October 23, 2000 (Volume 65, Number 205)]. http://www.epa.gov/ProjectXL/puget2/fpasigned.pdf

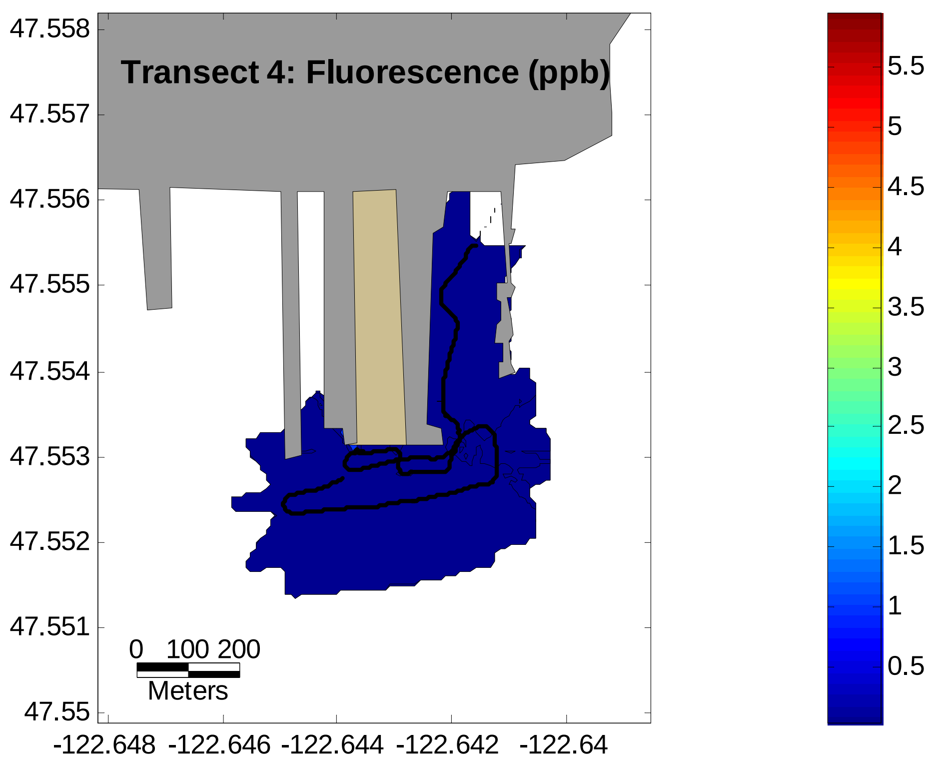
APPENDIX A- RUN 1 TRANSECT DATA

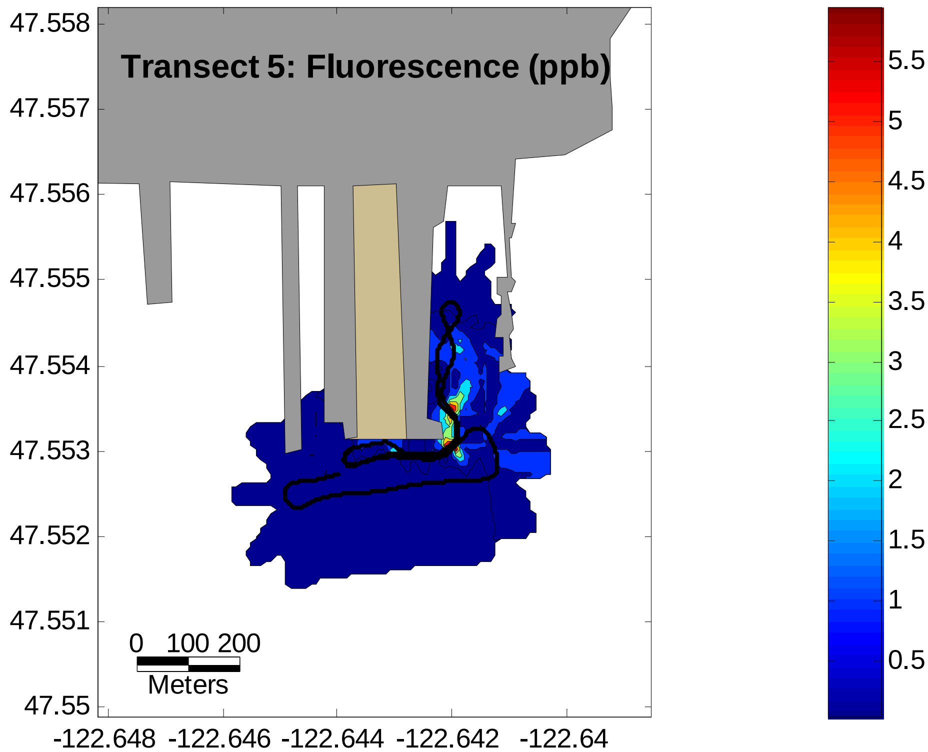
TRANSECT	Start	End	Tide (cm)
1	21.2500	21.2712	329.2
2	21.2795	21.2925	324.2
3	21.3060	21.3196	307.4
4	21.3478	21.3623	254.7
5	21.3737	21.3849	219.3
6	21.3956	21.4055	181.7
7	21.4196	21.4318	133.1
8	21.4375	21.4535	98.3
9	21.4638	21.4757	56.4
10	21.4861	21.5126	13.1
11	21.5179	21.5305	-5.5
12	21.5497	21.5656	-12.7
13	21.5896	21.6591	47.8


Transect 1: Fluorescence (ppb)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 2: Fluorescence (ppb)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 3: Fluorescence (ppb)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 4: Fluorescence (ppb)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 5: Fluorescence (ppb)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
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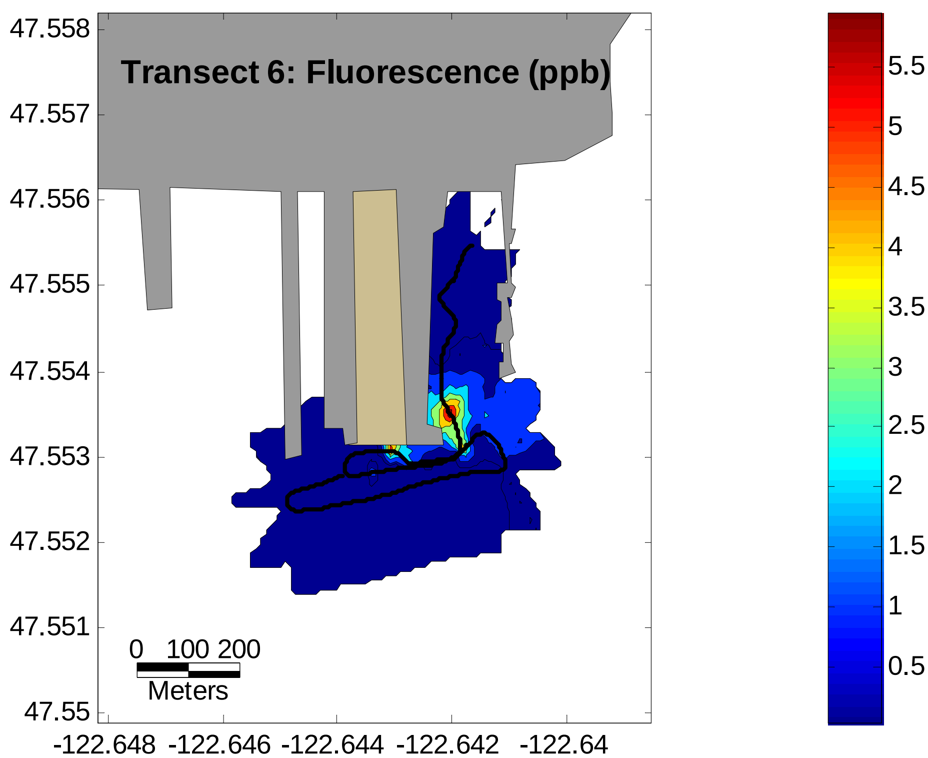
Transect 6: Fluorescence (ppb)
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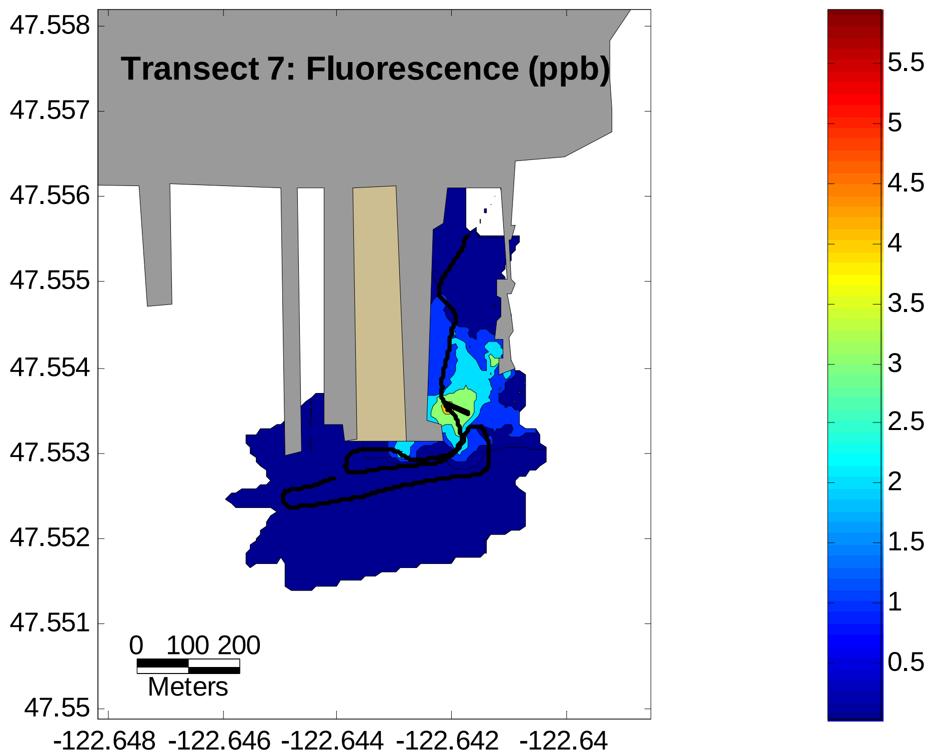
Transect 7: Fluorescence (ppb)
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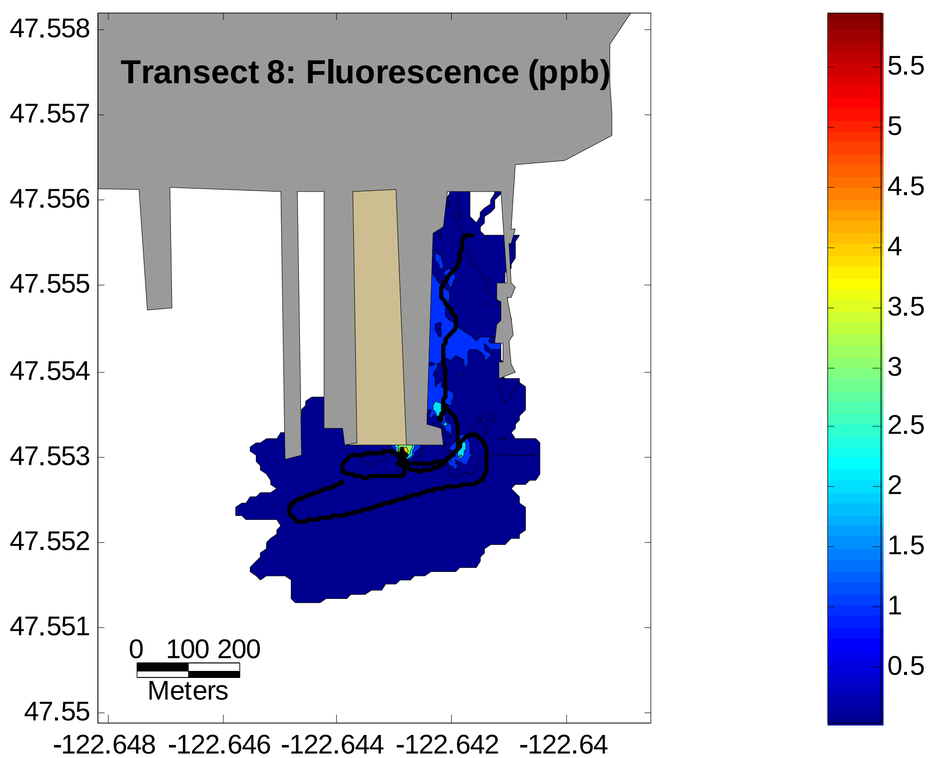
Transect 8: Fluorescence (ppb)
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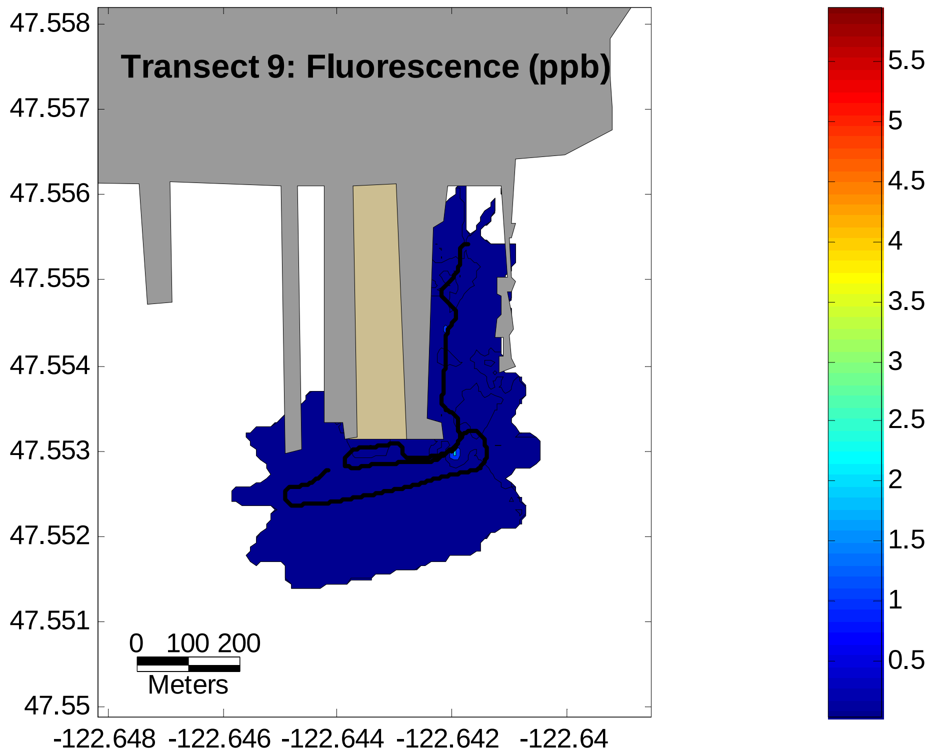
Transect 9: Fluorescence (ppb)
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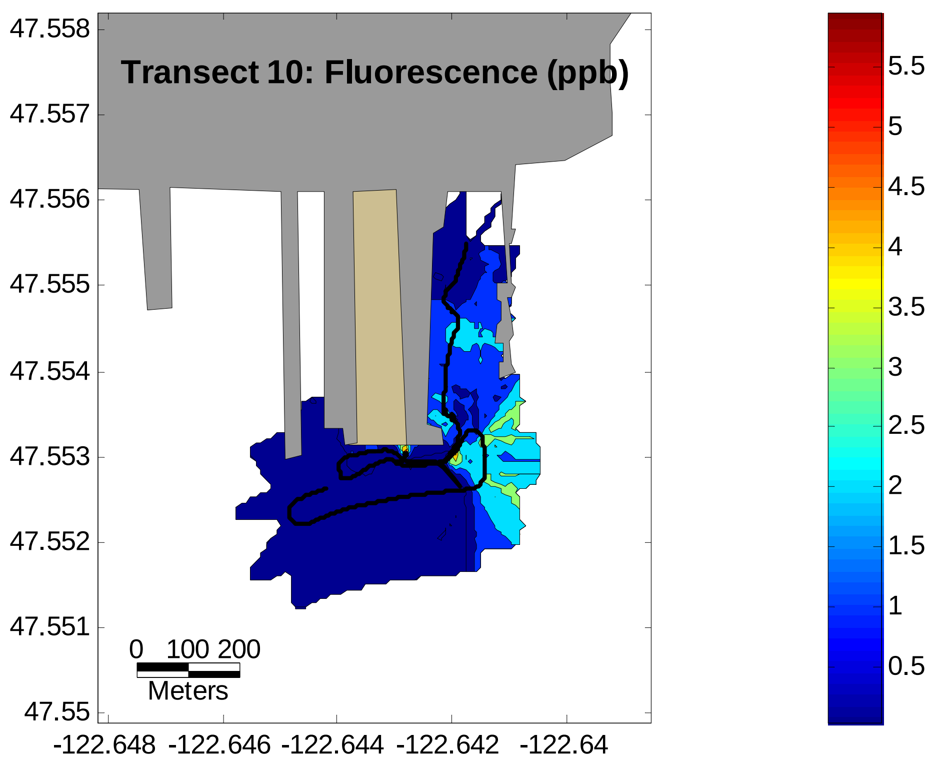
Transect 10: Fluorescence (ppb)
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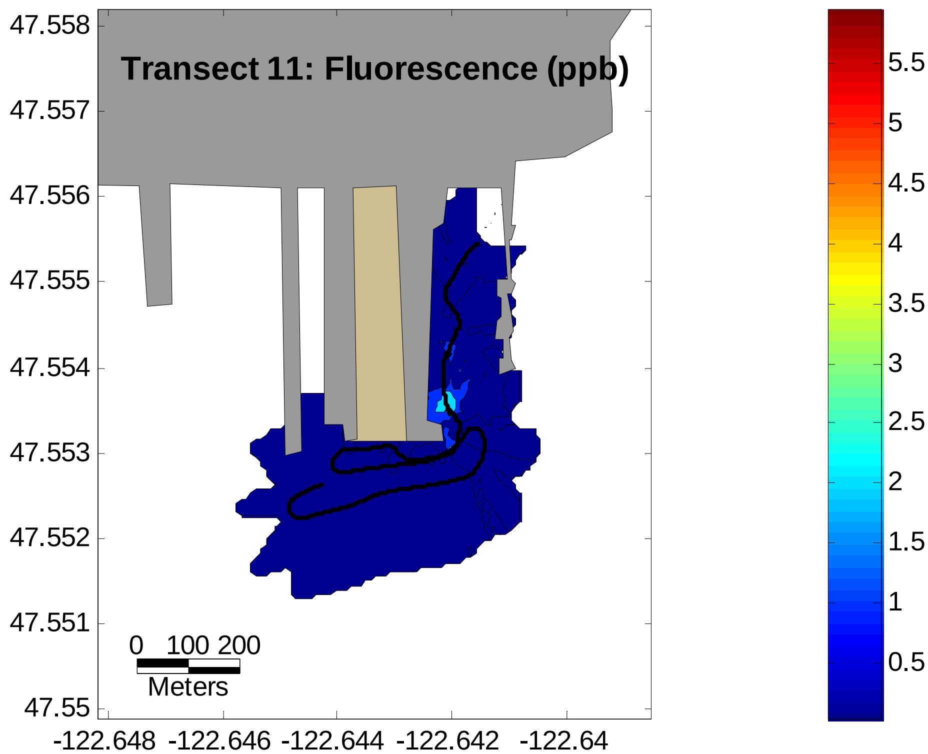
Transect 11: Fluorescence (ppb)
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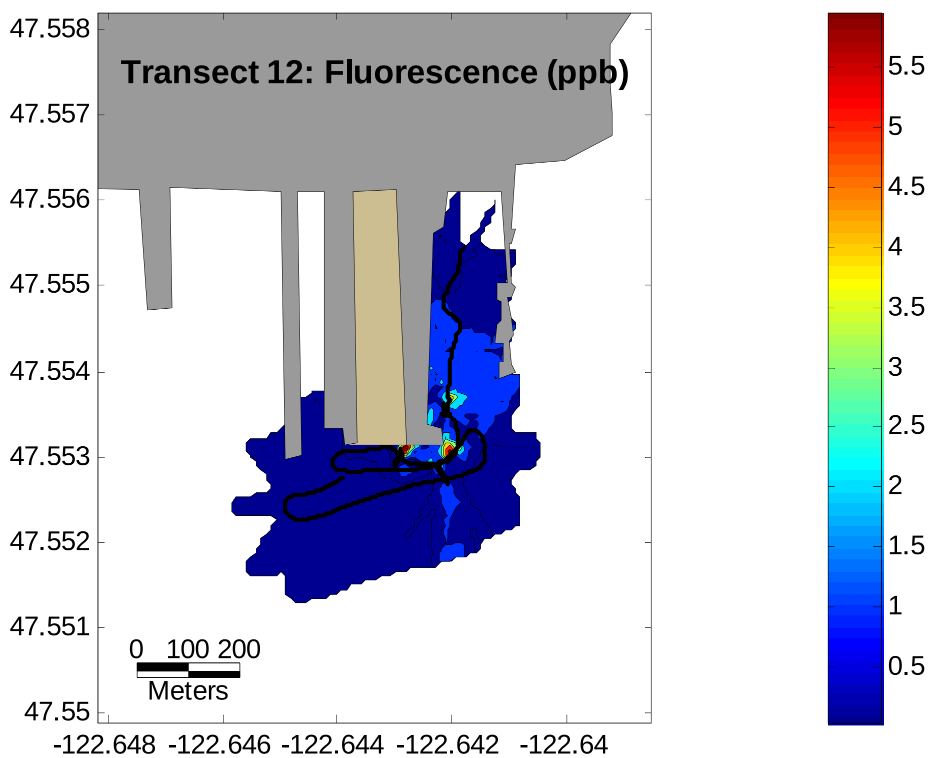
Transect 12: Fluorescence (ppb)
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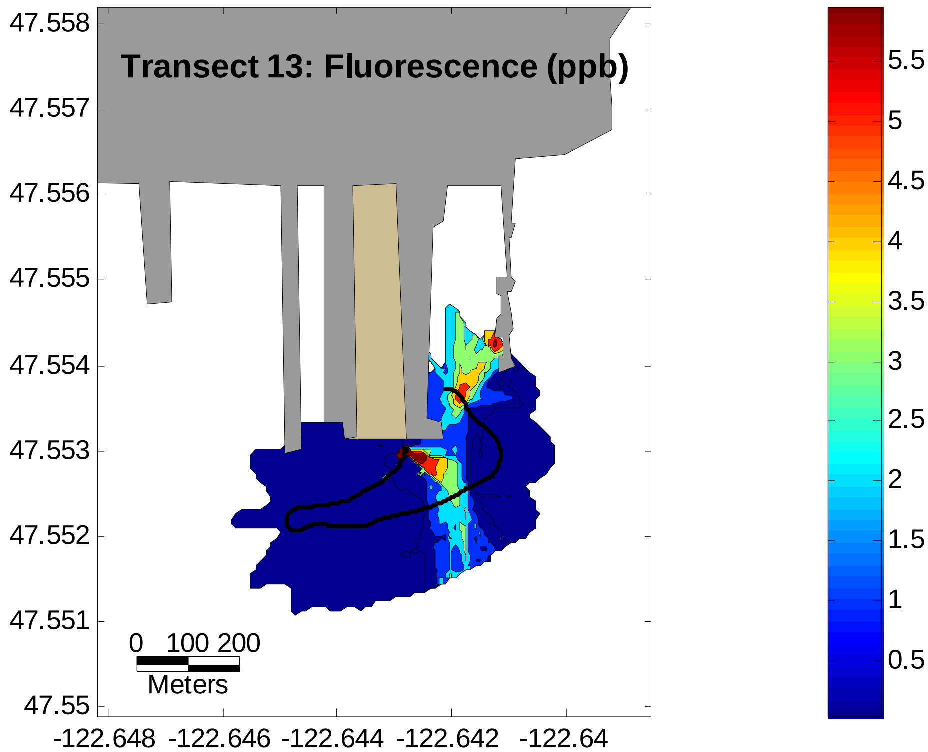
Transect 13: Fluorescence (ppb)
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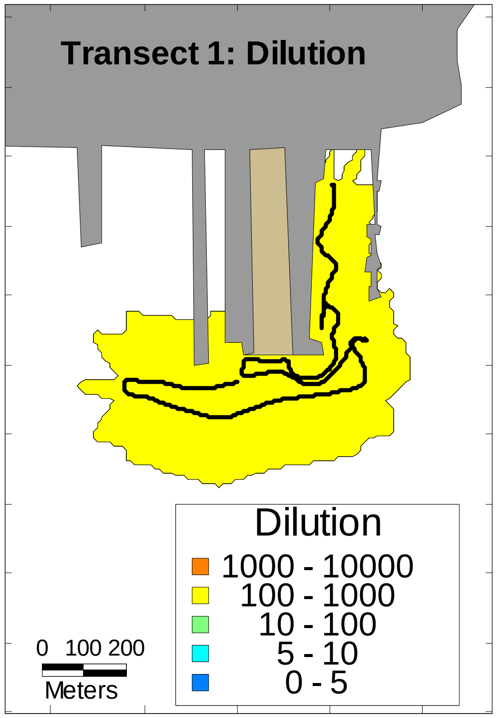
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Dilution
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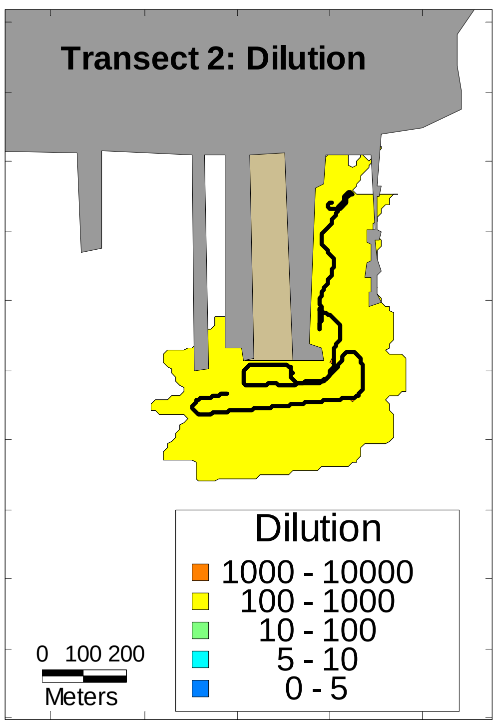
Meters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Dilution
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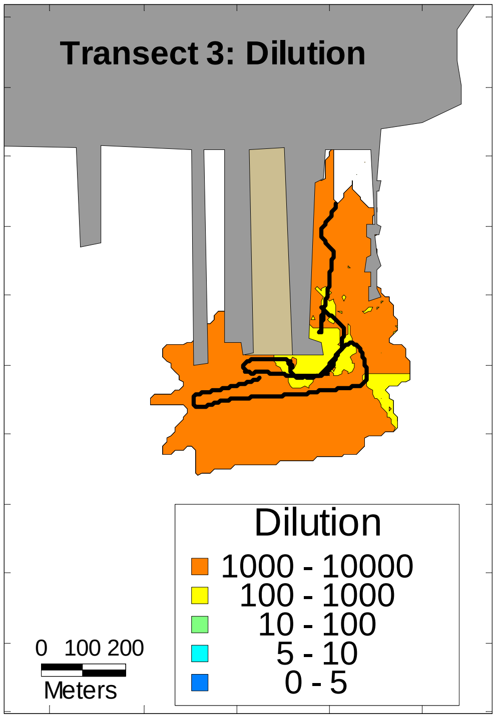
Meters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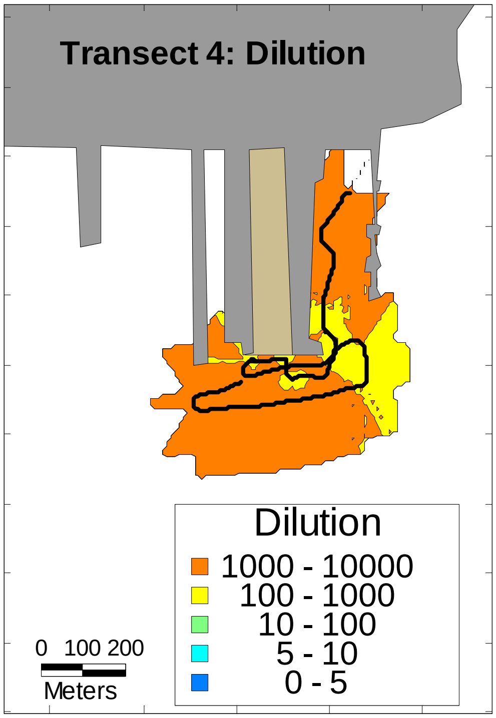
Meters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Dilution
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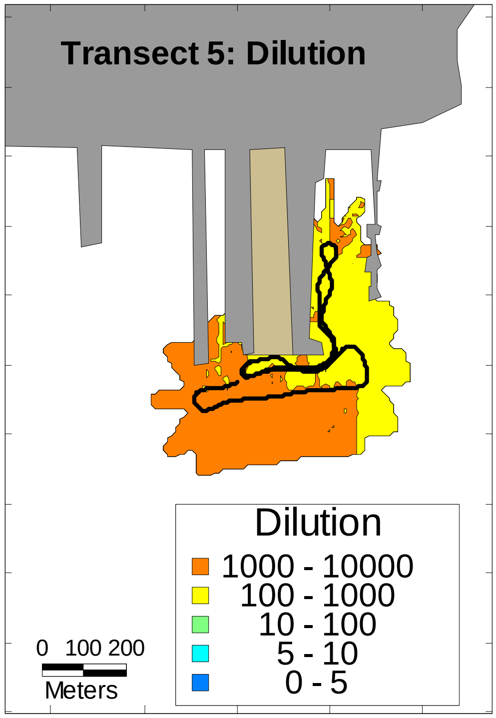
Meters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Dilution
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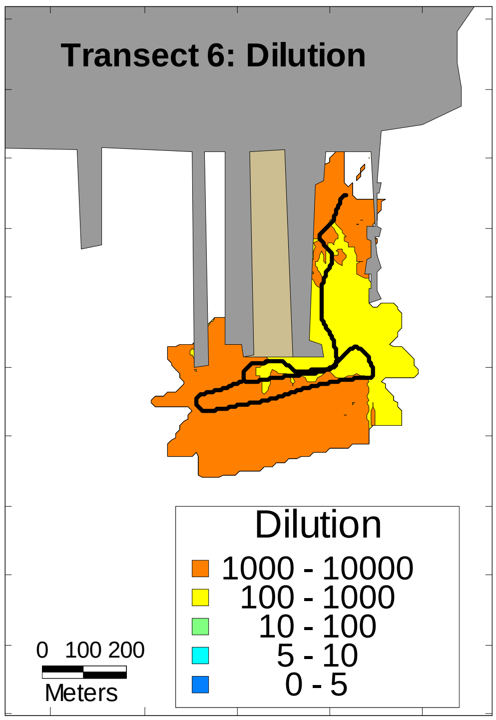
5 - 10
0 - 5
0 100 200
Meters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Dilution
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10 - 100
5 - 10
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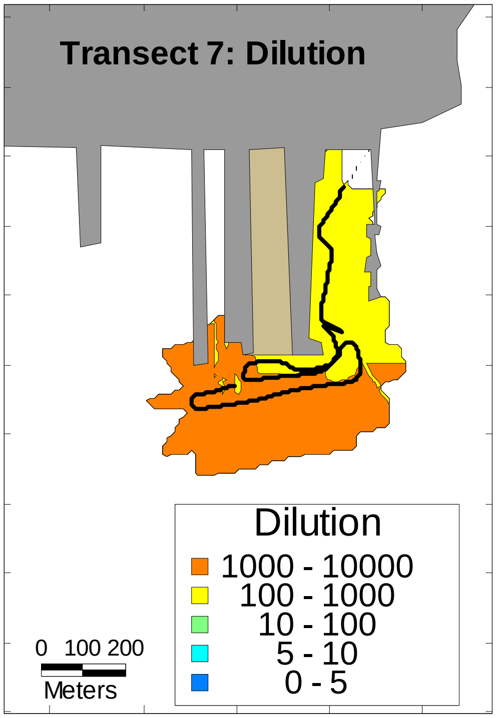
Meters



Transect 7: Dilution
Dilution
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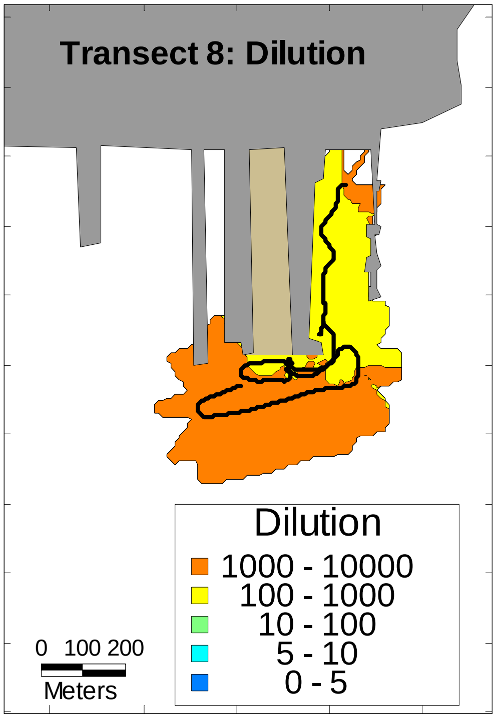

Transect 8: Dilution
Dilution
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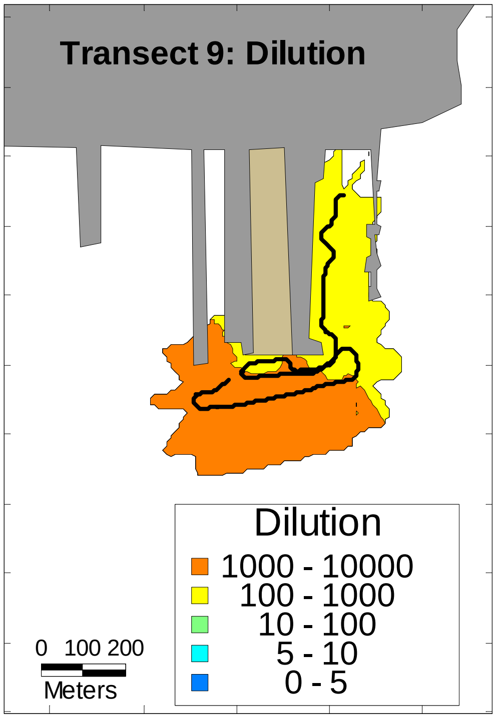
100 - 1000
10 - 100
5 - 10
0 - 5
0 100 200
Meters


Transect 9: Dilution
Dilution
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100 - 1000
10 - 100
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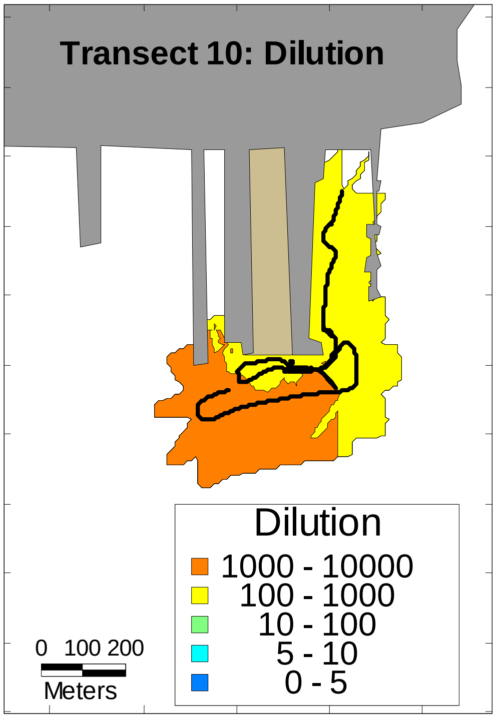
0 - 5
0 100 200
Meters


Transect 10: Dilution
Dilution
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100 - 1000
10 - 100
5 - 10
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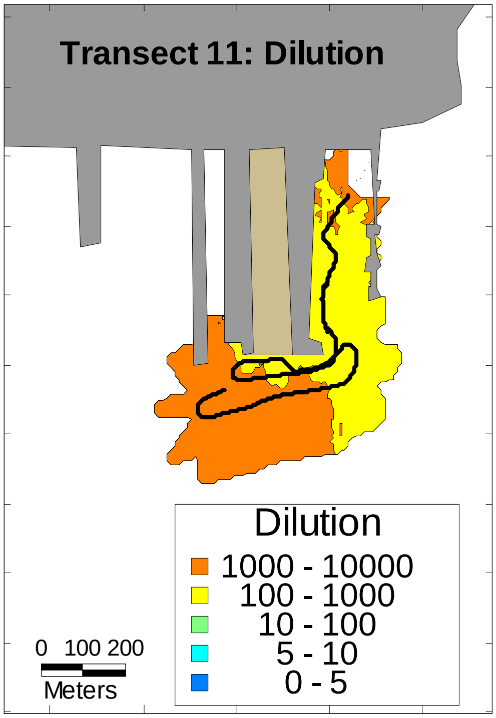
Meters


Transect 11: Dilution
Dilution
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10 - 100
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0 - 5
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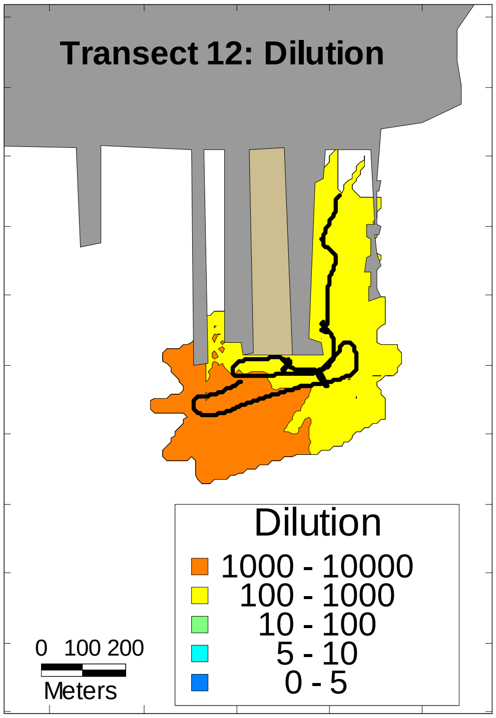
Transect 12: Dilution
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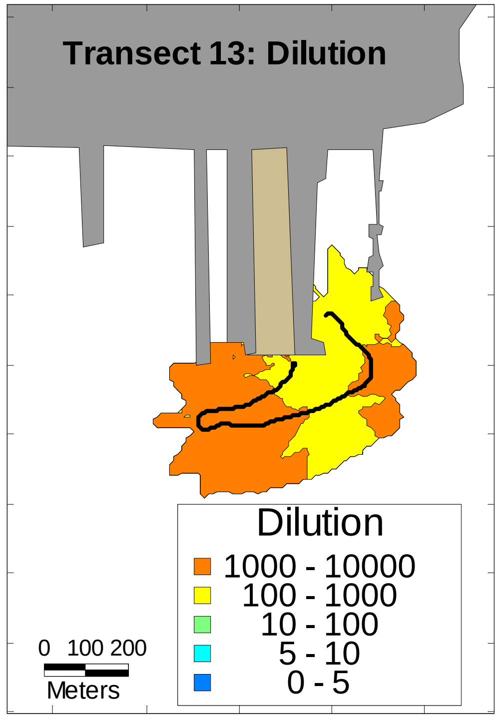
5 - 10
0 - 5
0 100 200
Meters



Transect 13: Dilution
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1000 - 10000
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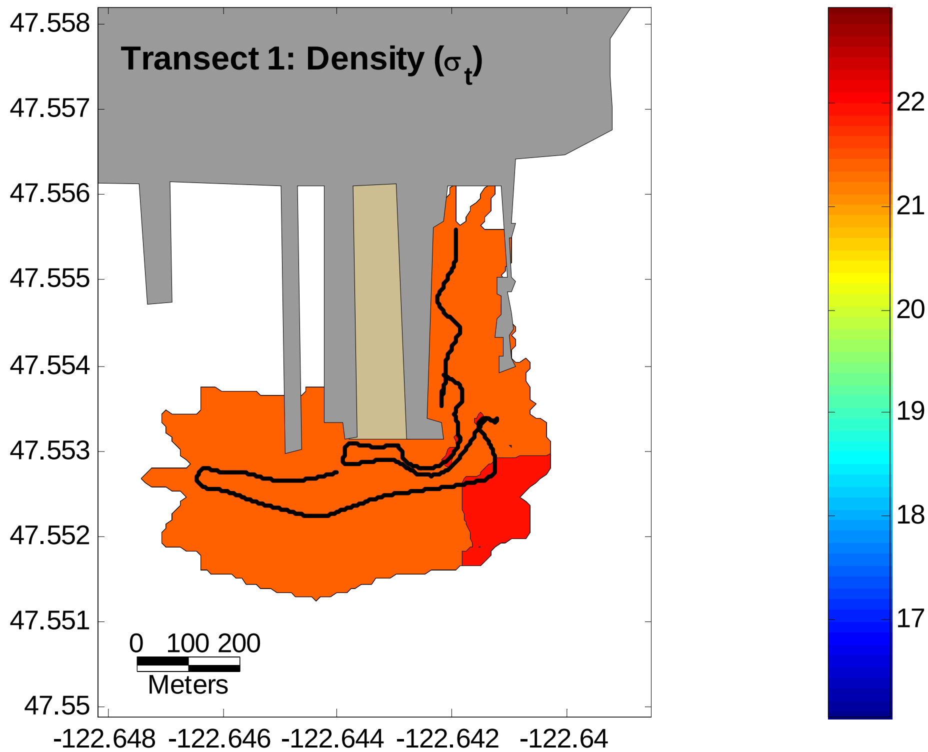
Meters


Transect 1: Density (σ_t)
47.558
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0 100 200
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-122.648 -122.646 -122.644 -122.642 -122.64
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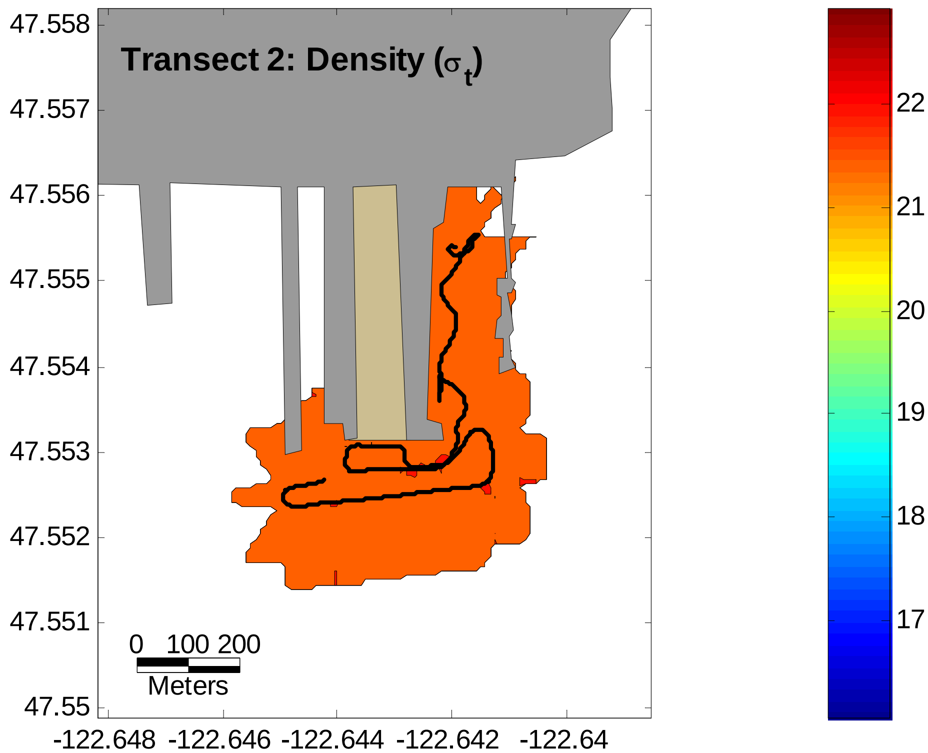
Transect 2: Density (σ_t)
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-122.648 -122.646 -122.644 -122.642 -122.64
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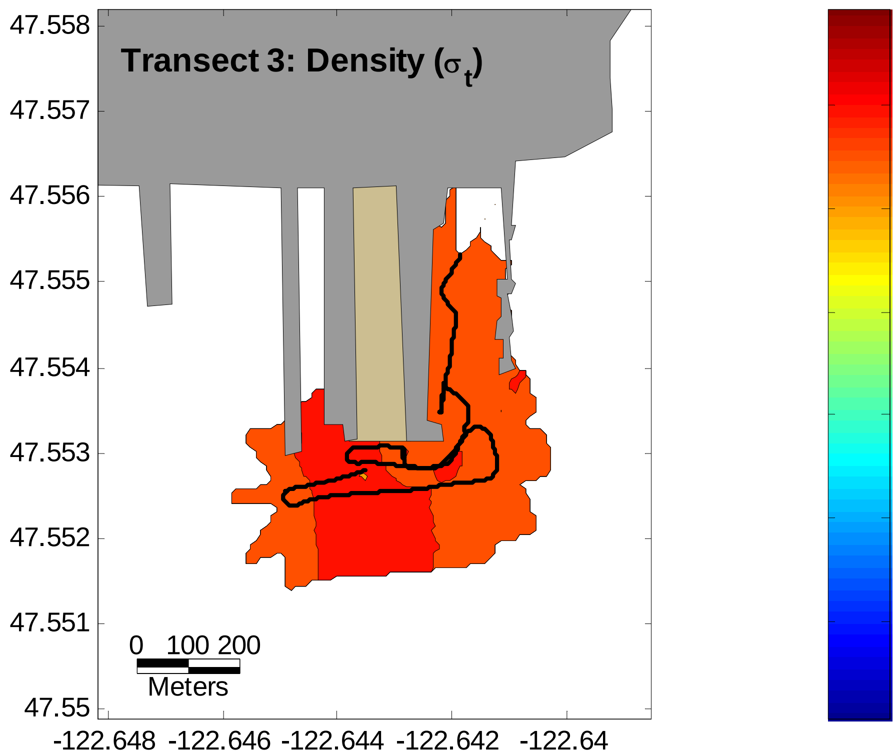

Transect 3: Density (σ_t)
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-122.648 -122.646 -122.644 -122.642 -122.64
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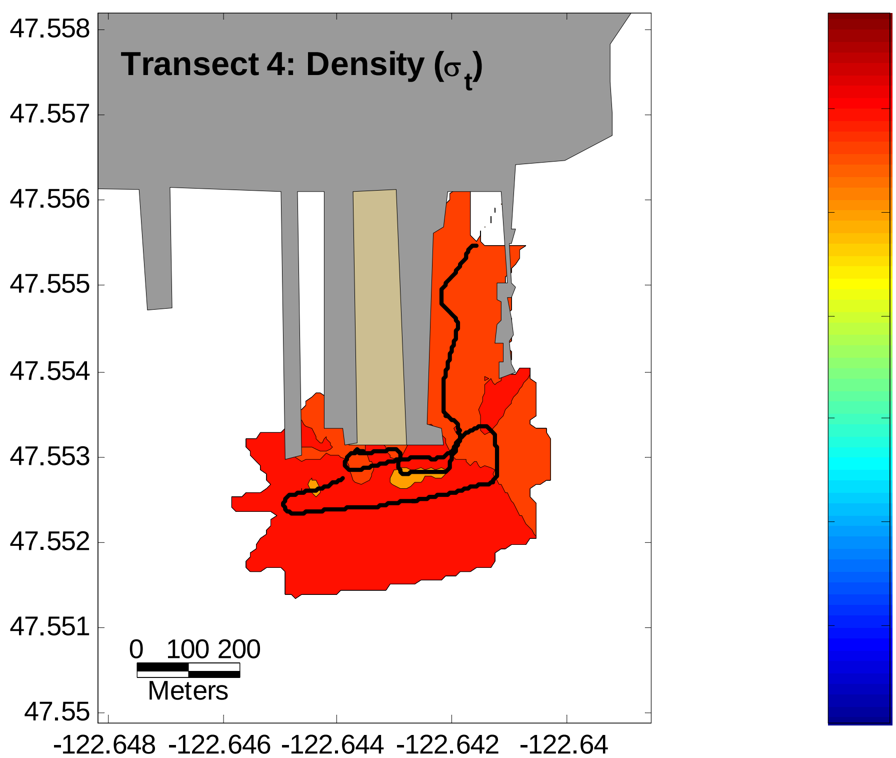

Transect 4: Density (σ_t)
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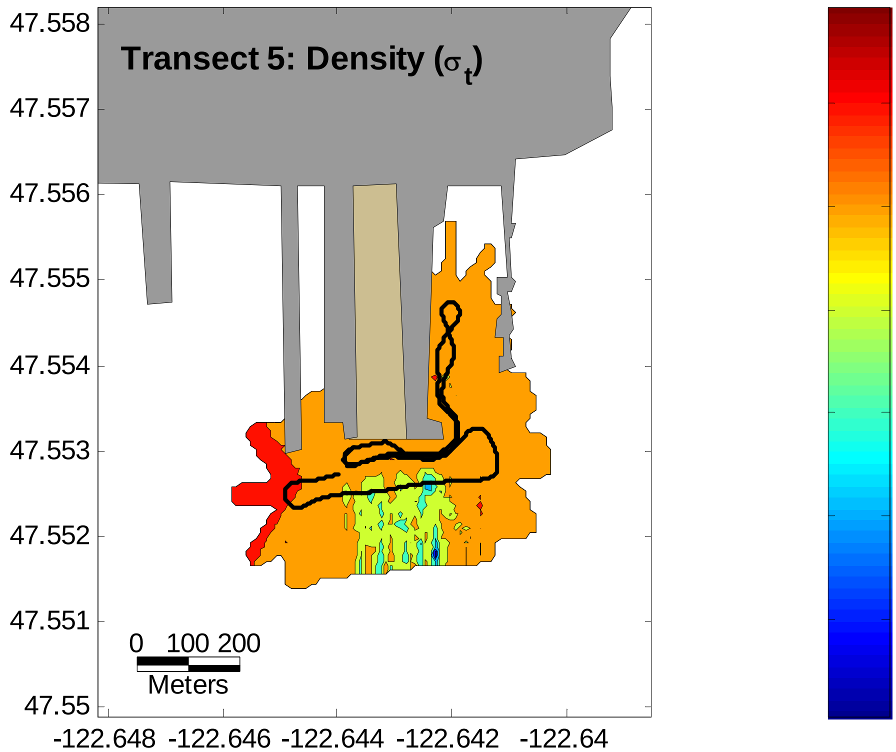
Transect 5: Density (σ_t)
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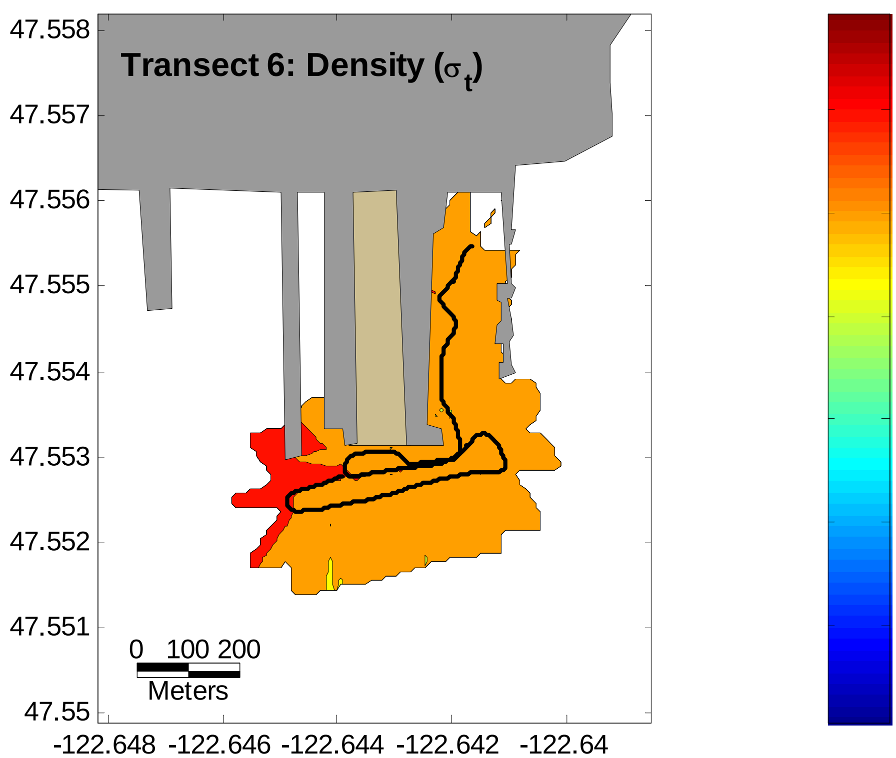
Transect 6: Density (σ_t)
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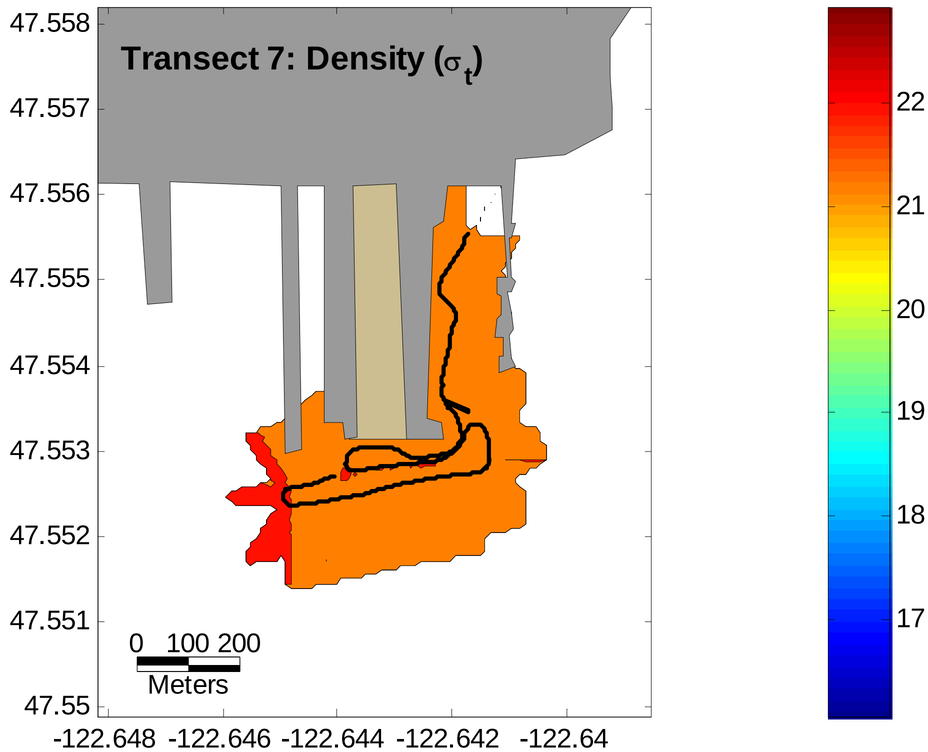
Transect 7: Density (σ_t)
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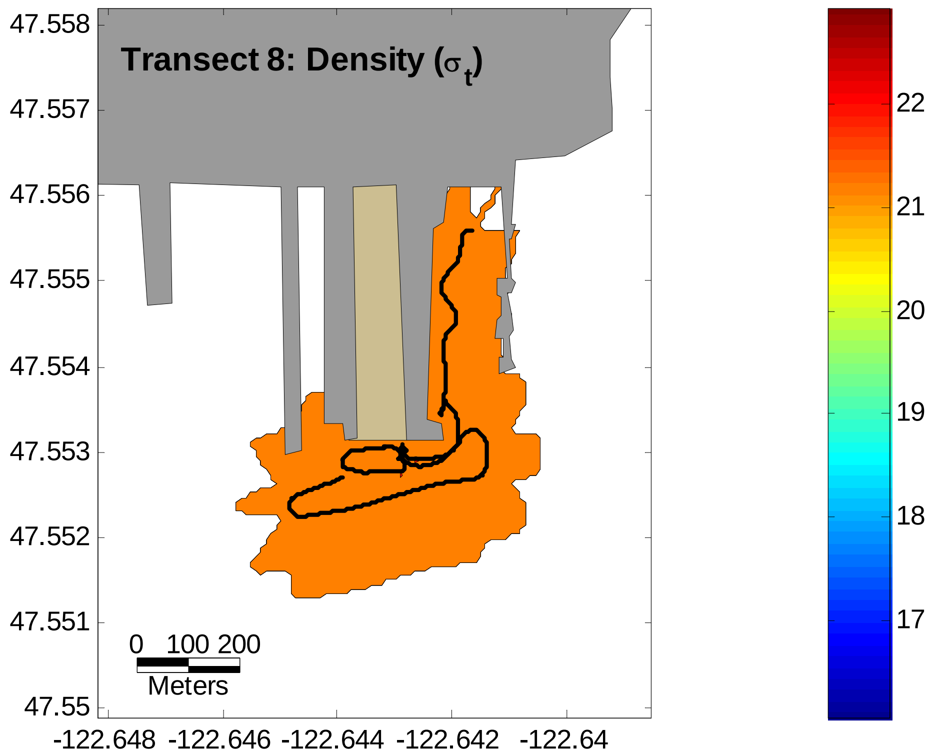
Transect 8: Density (σ_t)
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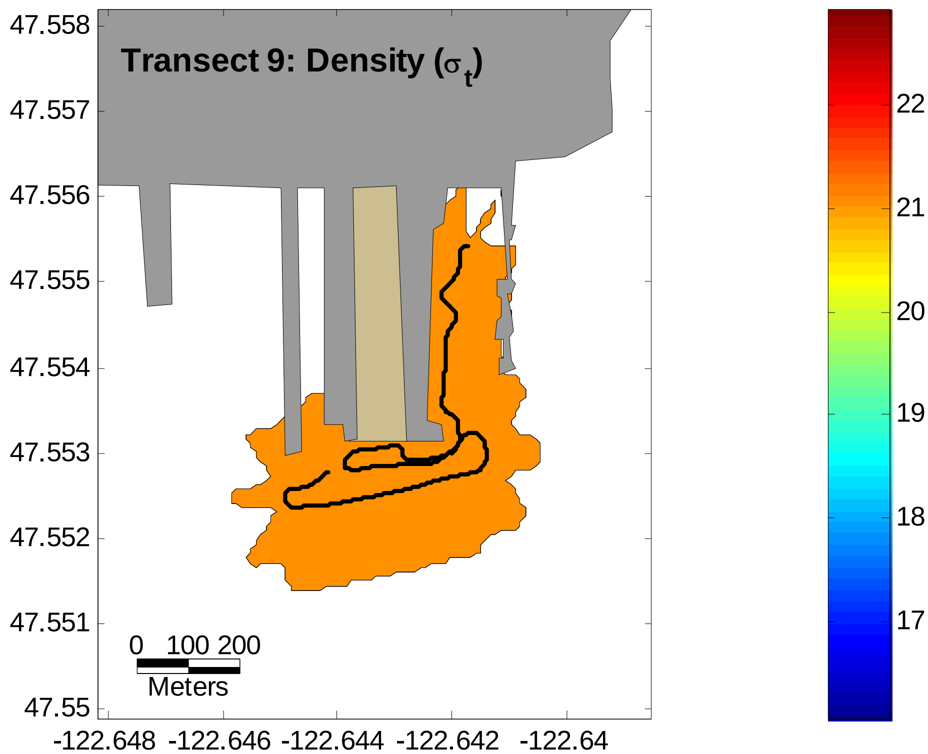

Transect 9: Density (σ_t)
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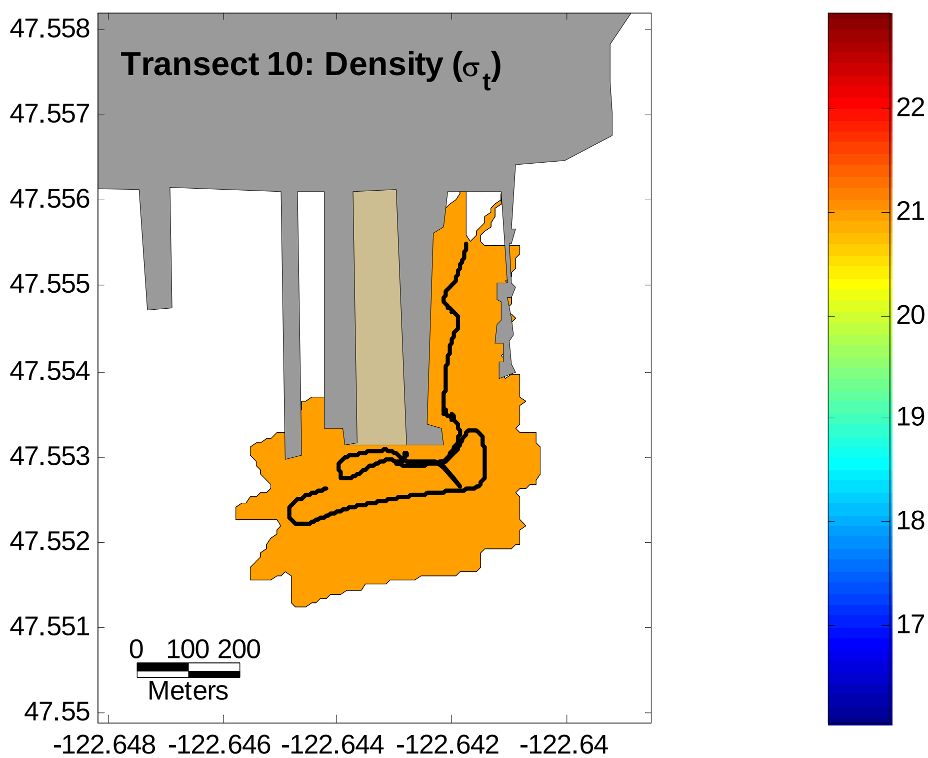

Transect 10: Density (σ_t)
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Meters
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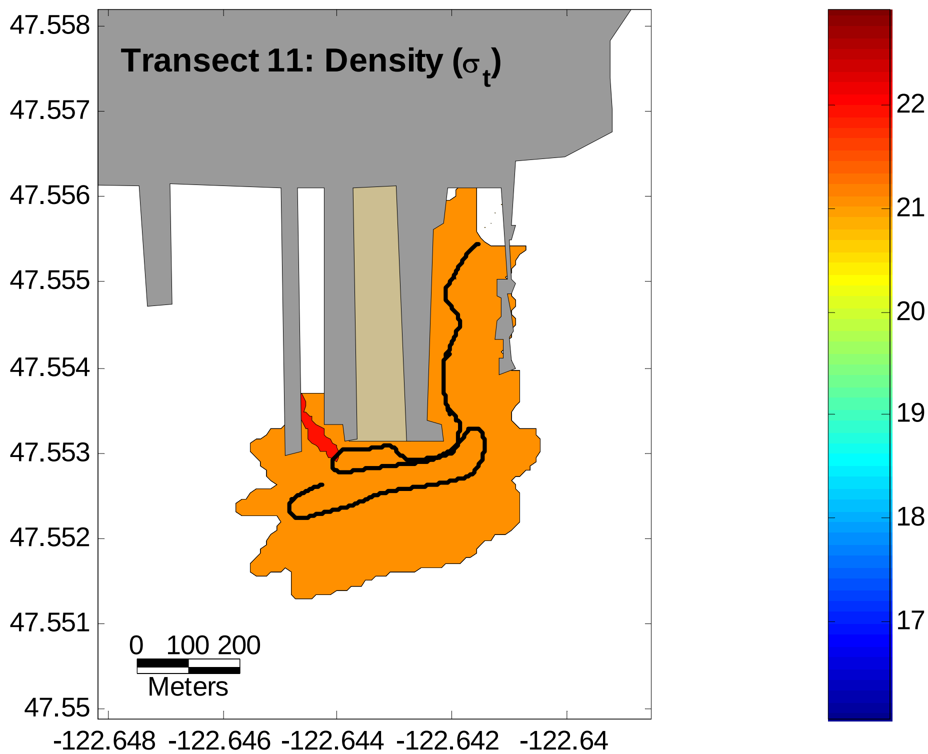
Transect 11: Density (σ_t)
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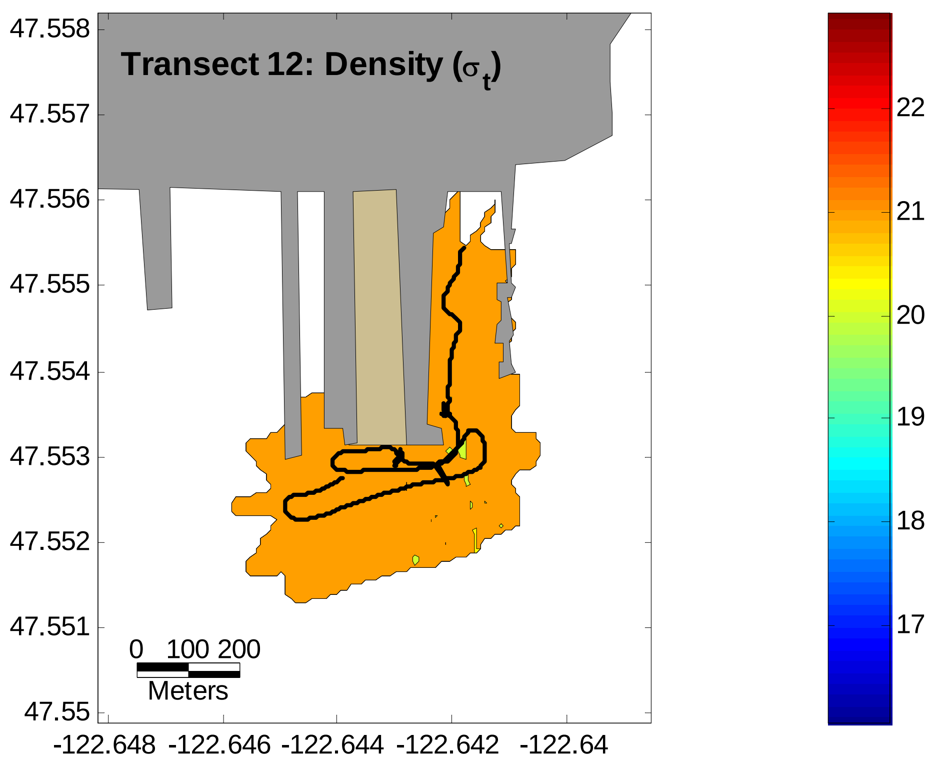
Transect 12: Density (σ_t)
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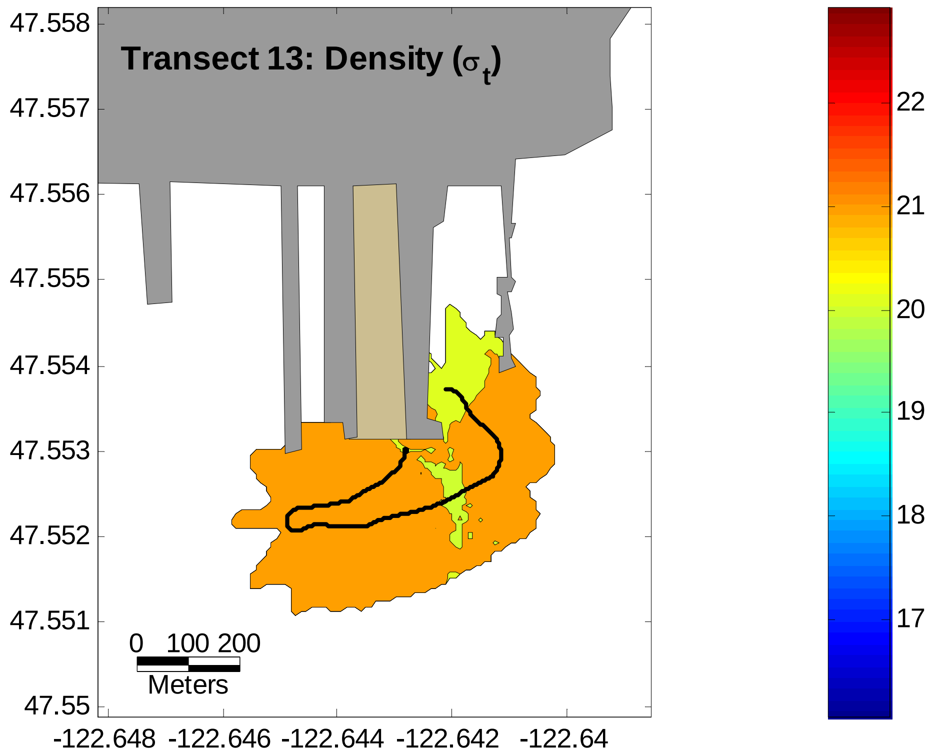
Transect 13: Density (σ_t)
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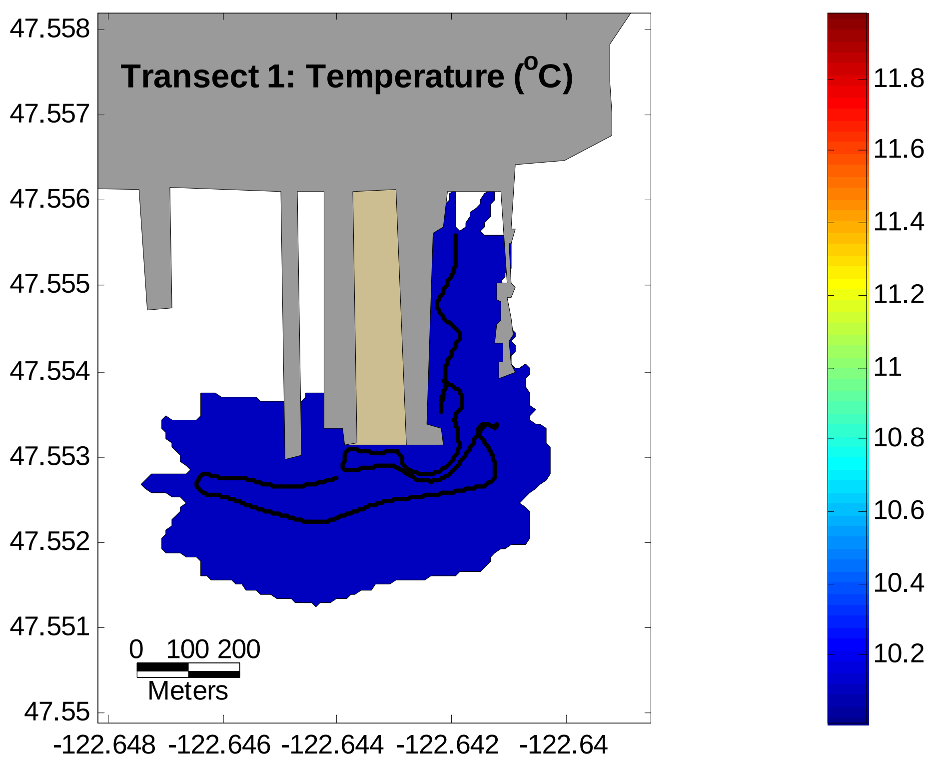
Transect 1: Temperature (^oC)
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-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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11.6
11.4
11.2
11
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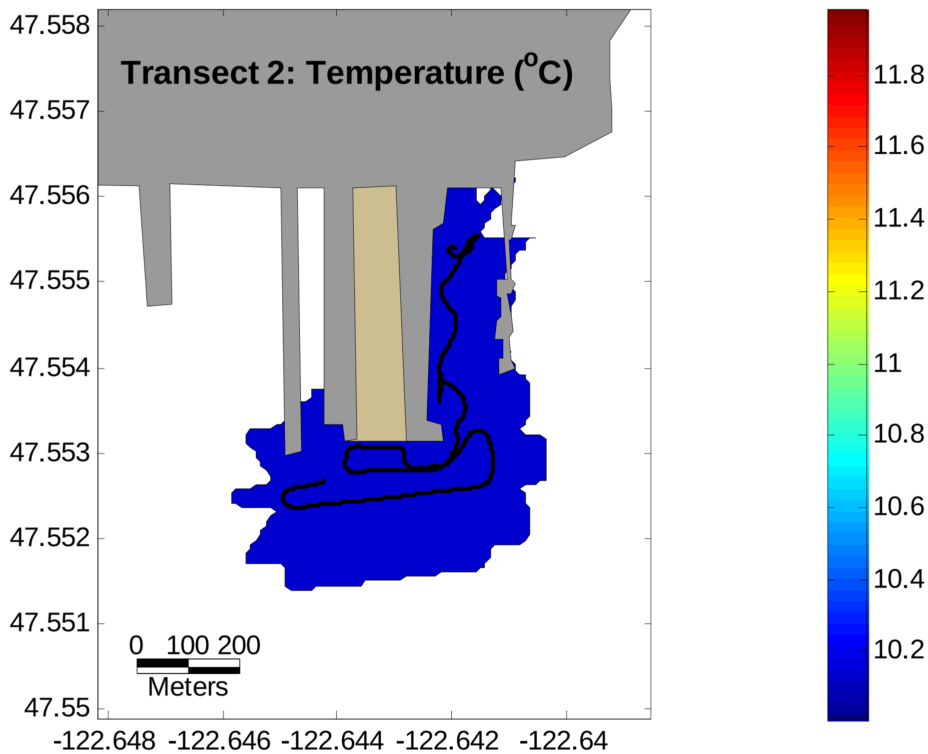
10.2


Transect 2: Temperature (°C)
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Meters
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11.4
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11
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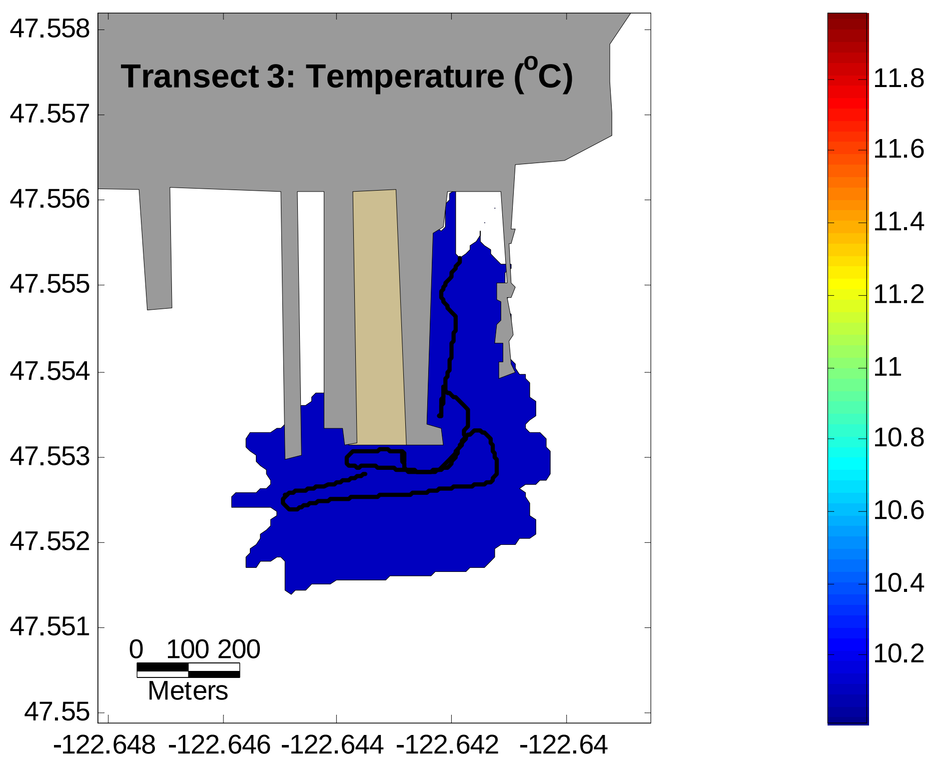
Transect 3: Temperature (°C)
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11.4
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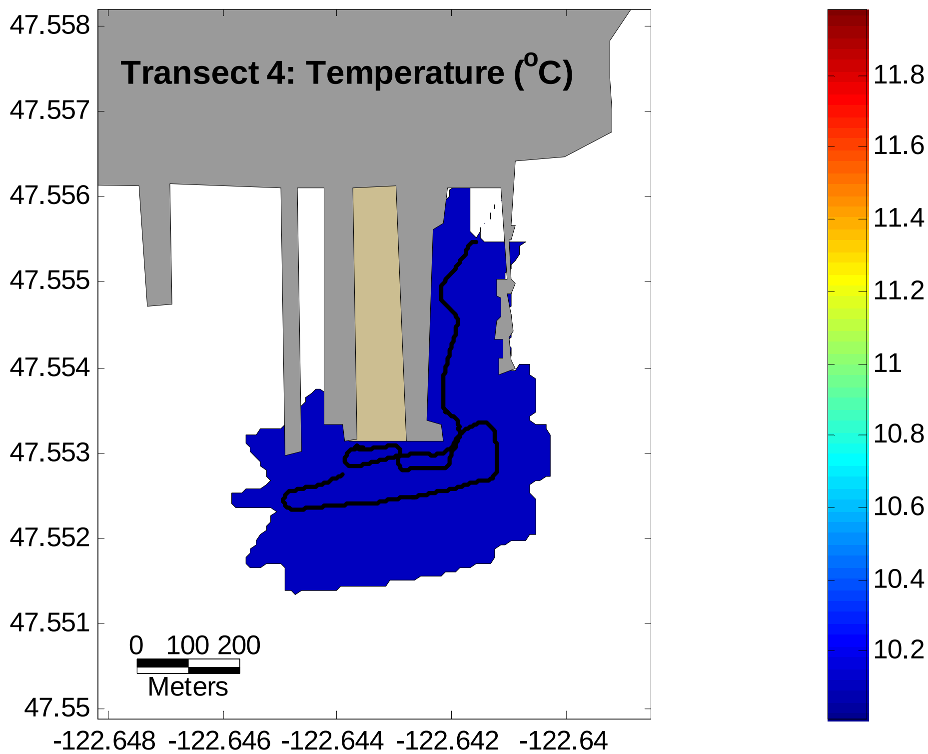
Transect 4: Temperature (^oC)
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0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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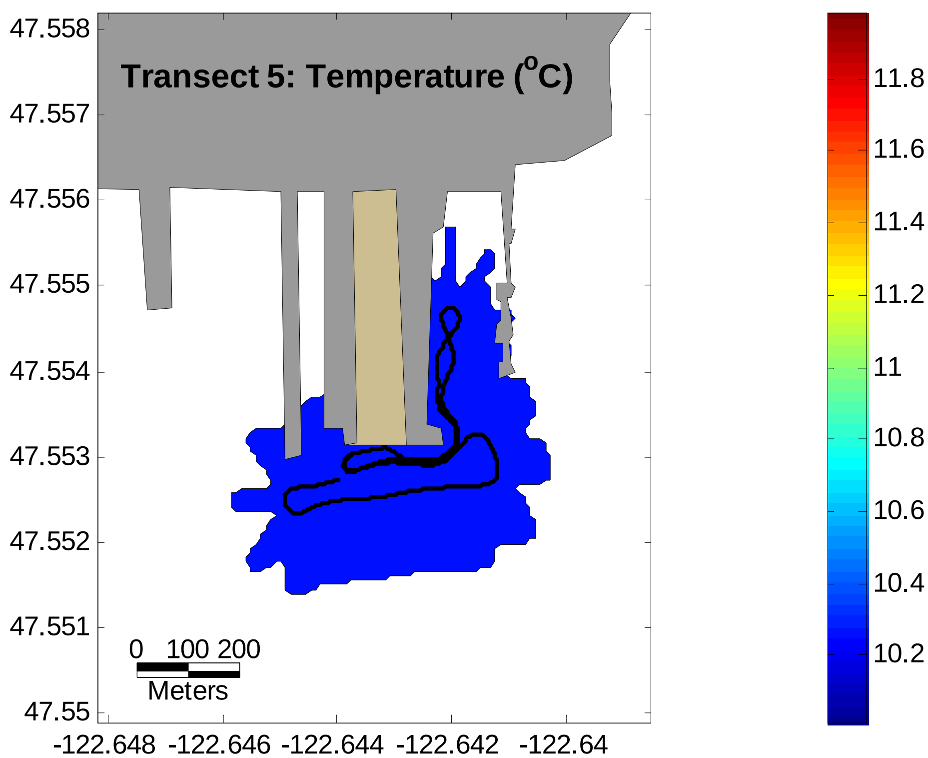
Transect 5: Temperature (^oC)
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0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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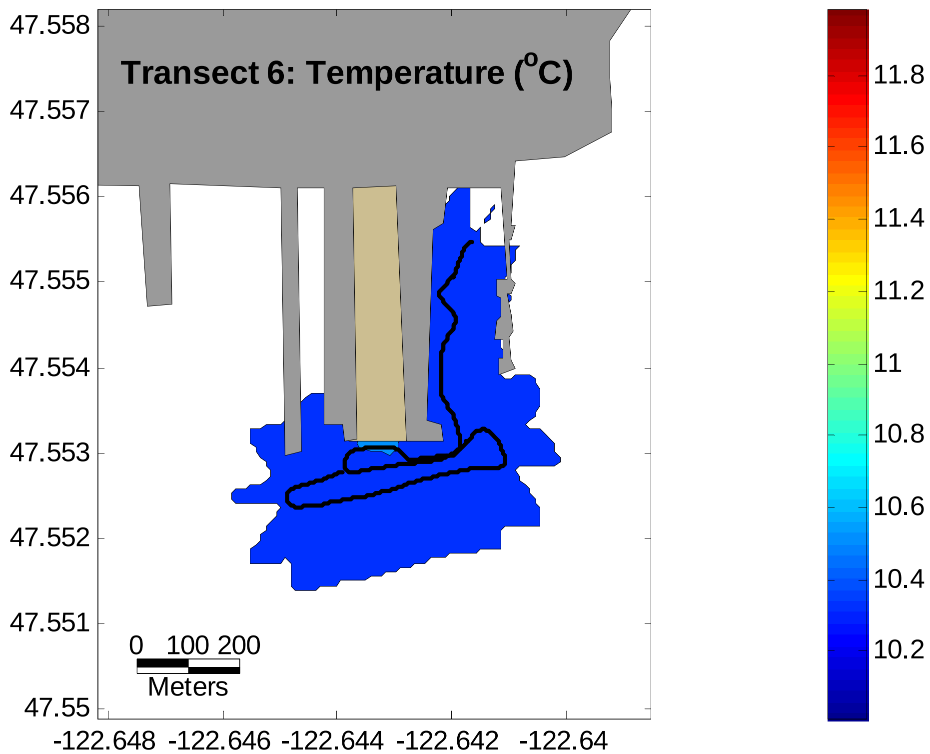
Transect 6: Temperature (°C)
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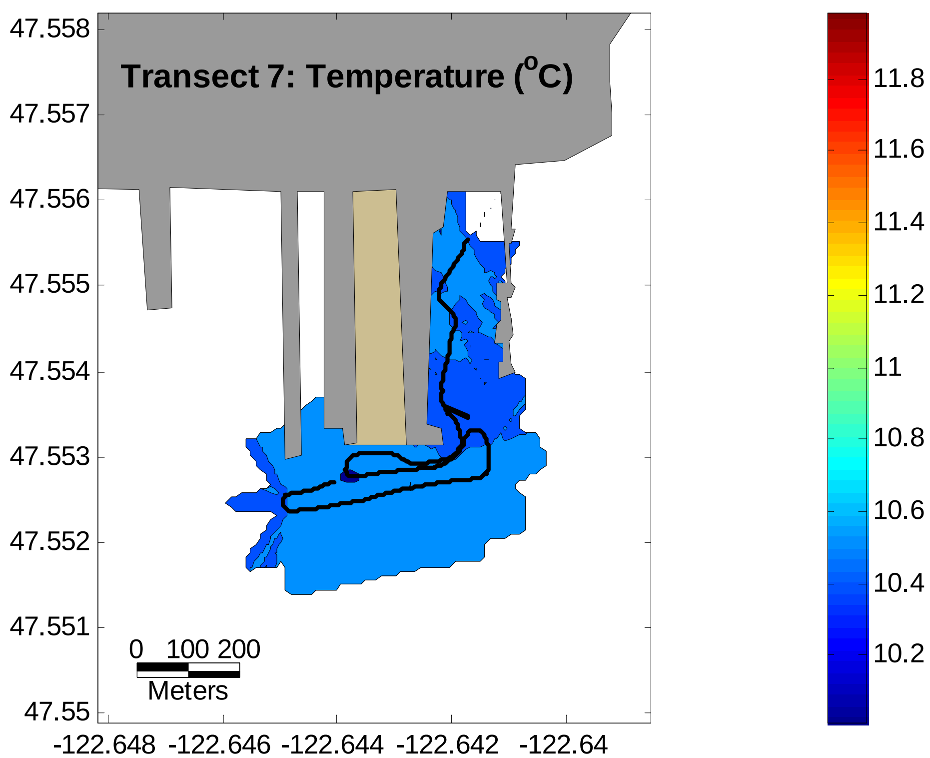
Transect 7: Temperature (°C)
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47.557
47.556
47.555
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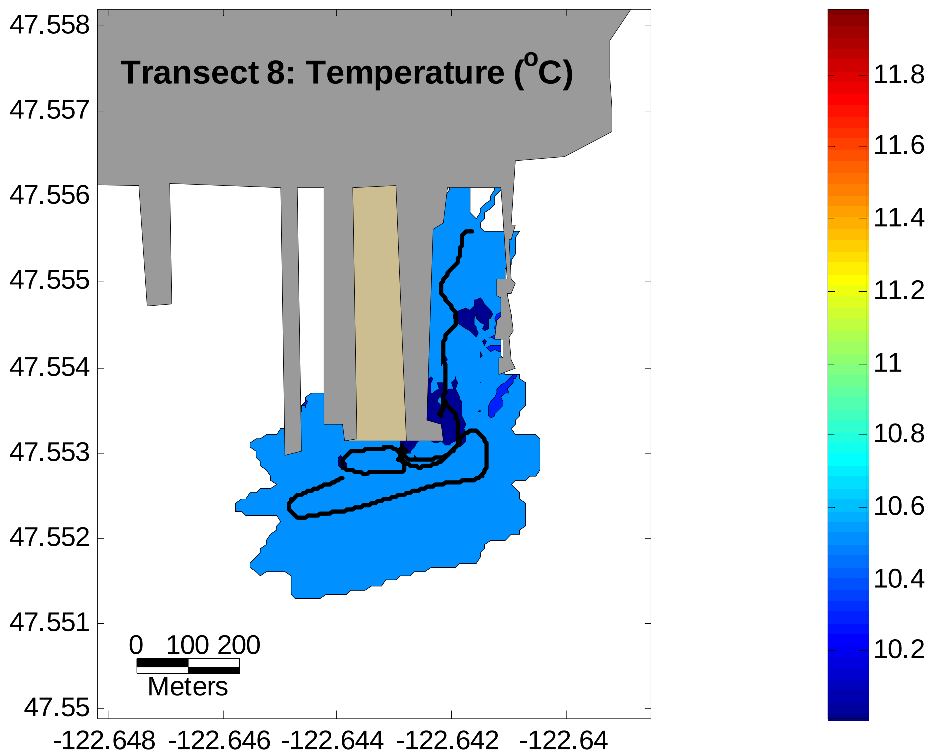
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
10.2


Transcect 8: Temperature (°C)
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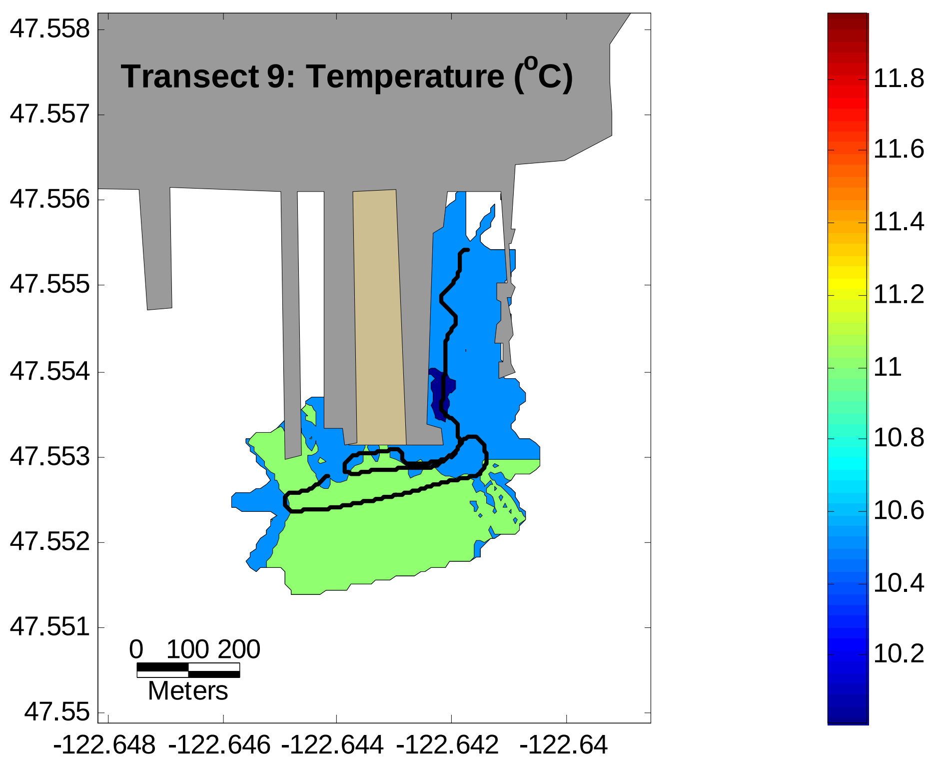
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
10.2


Transect 9: Temperature (°C)
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47.556
47.555
47.554
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47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
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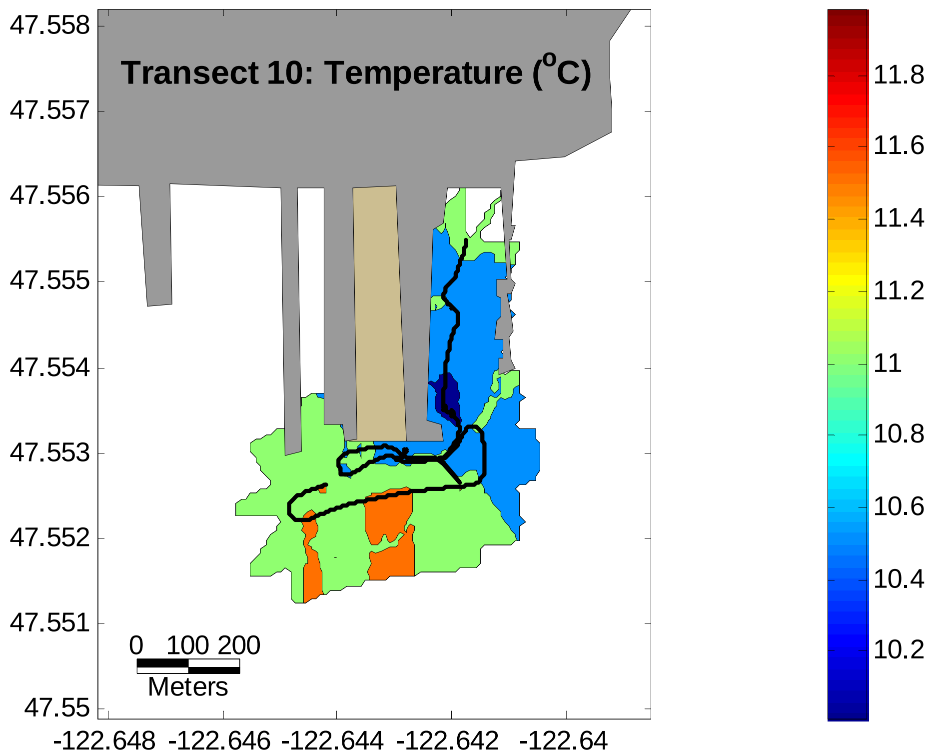
10.8
10.6
10.4
10.2


Transect 10: Temperature (^oC)
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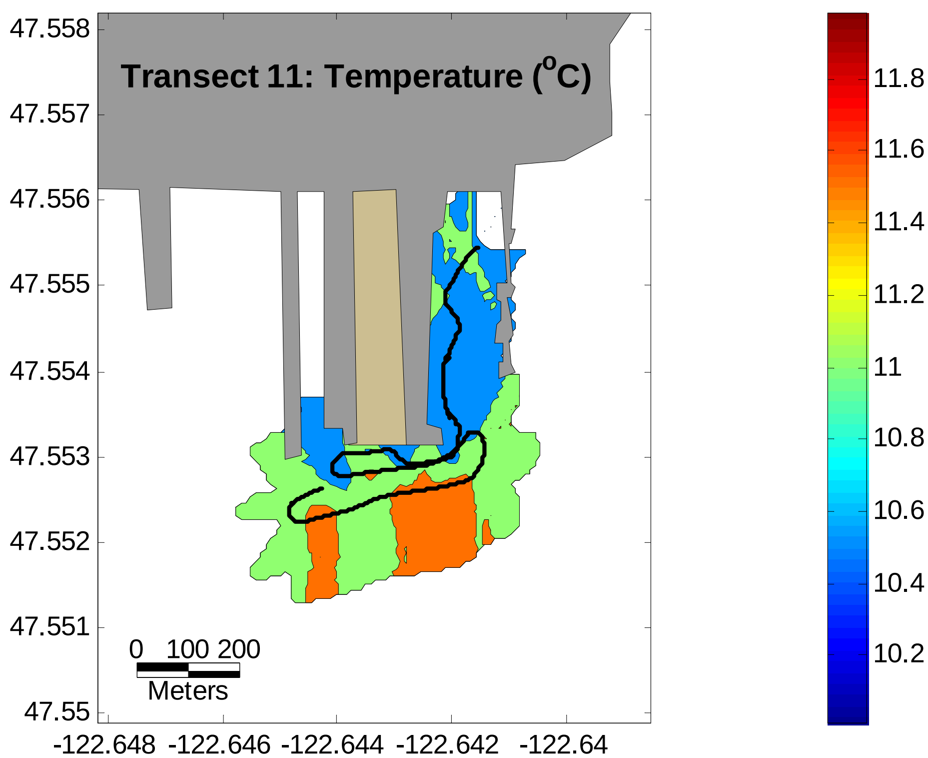
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
10.2


Transect 11: Temperature (^oC)
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47.557
47.556
47.555
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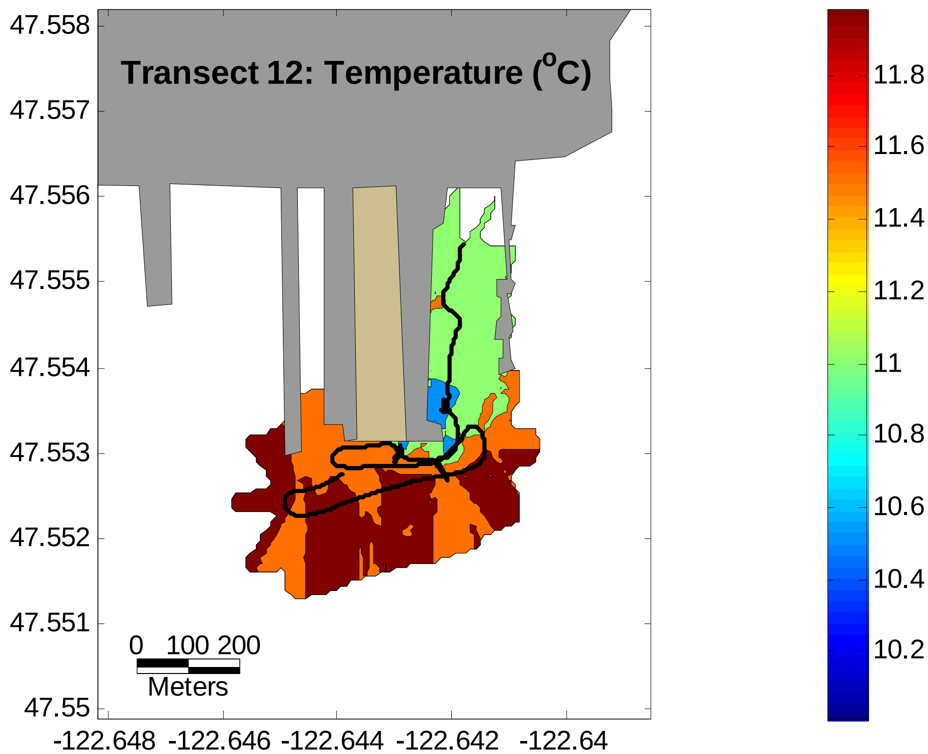
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
10.2


Transect 12: Temperature (^oC)
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47.557
47.556
47.555
47.554
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47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
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Meters
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11.6
11.4
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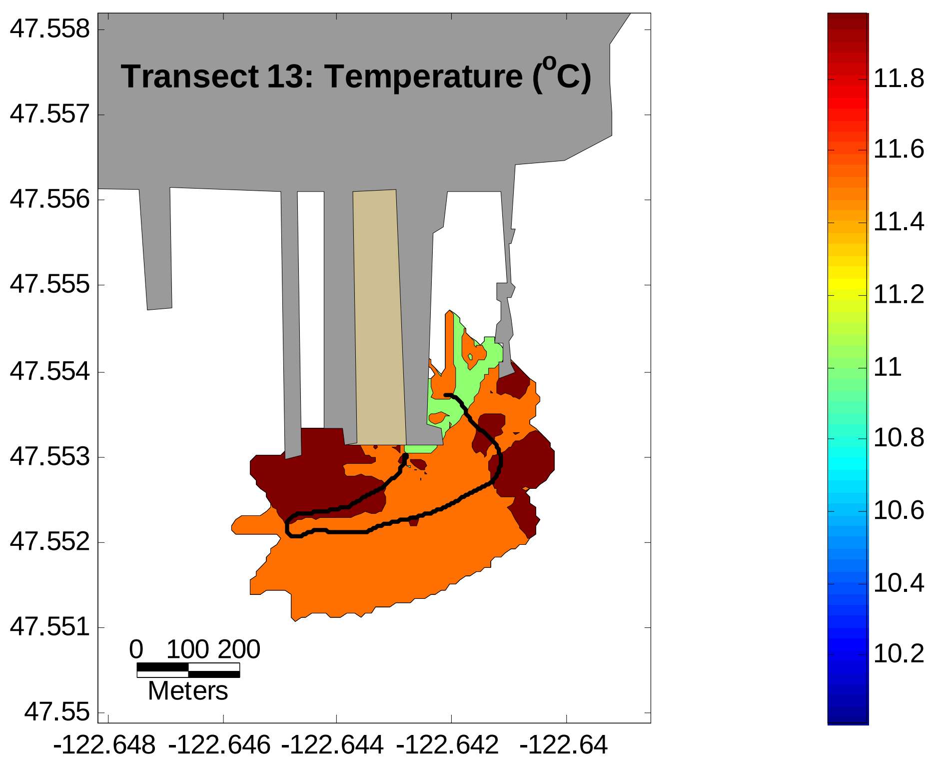
10.8
10.6
10.4
10.2


Transect 13: Temperature (^oC)
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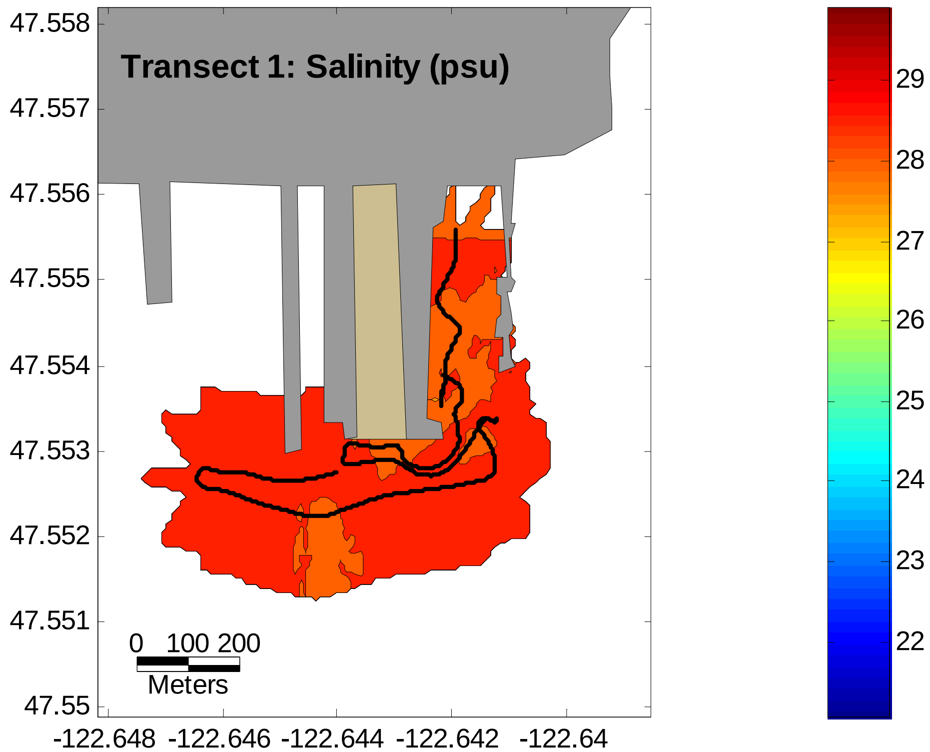
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
11.8
11.6
11.4
11.2
11
10.8
10.6
10.4
10.2


Transect 1: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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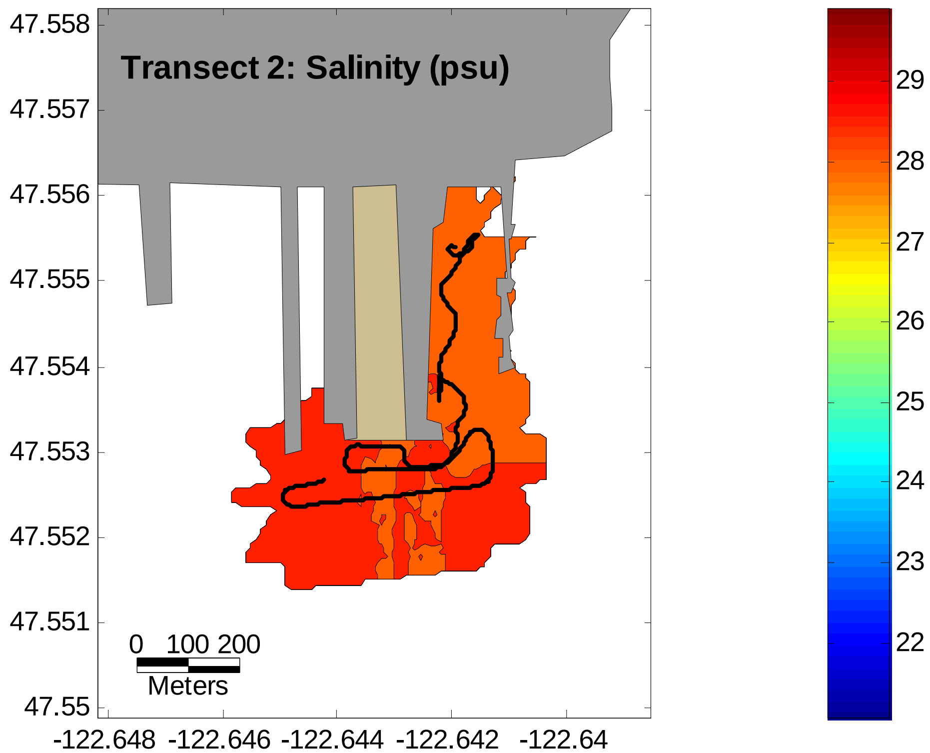
23
22


Transect 2: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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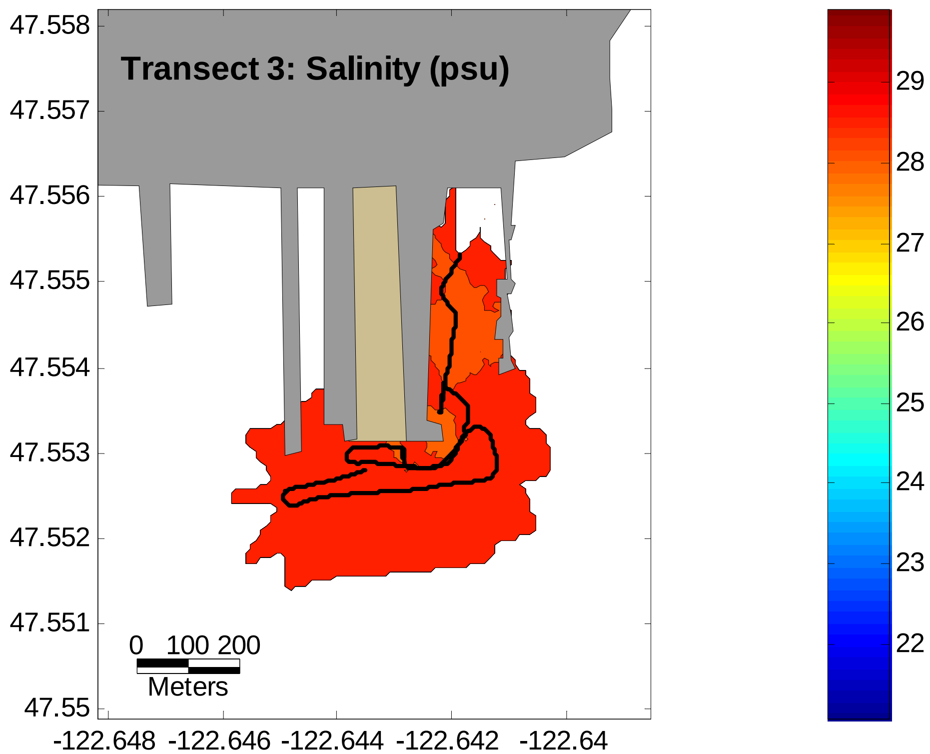
22


Transect 3: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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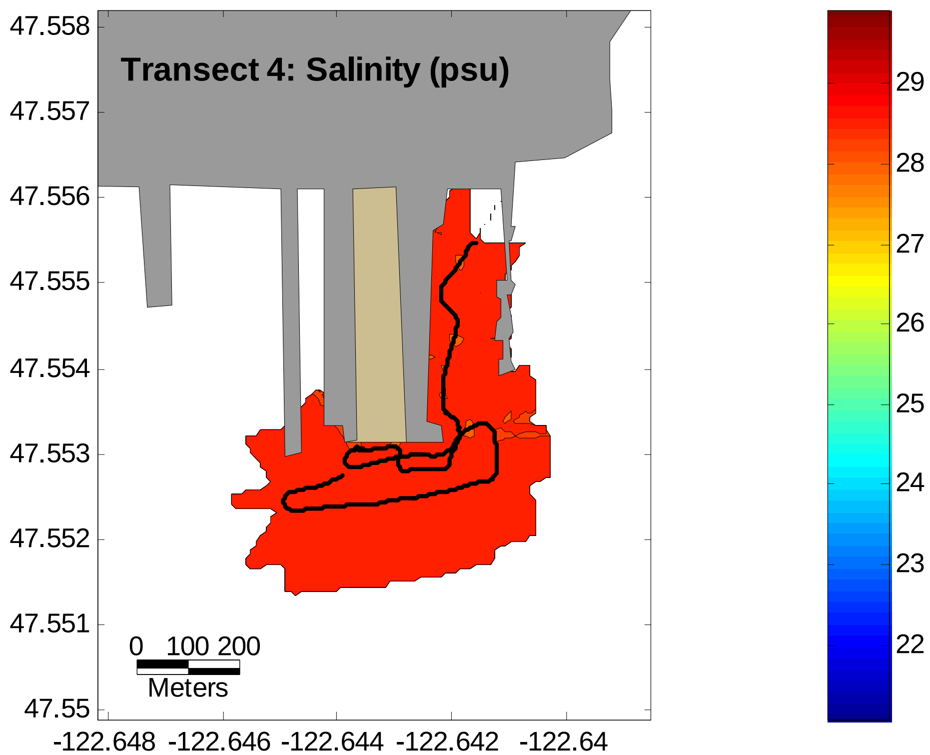
Transect 4: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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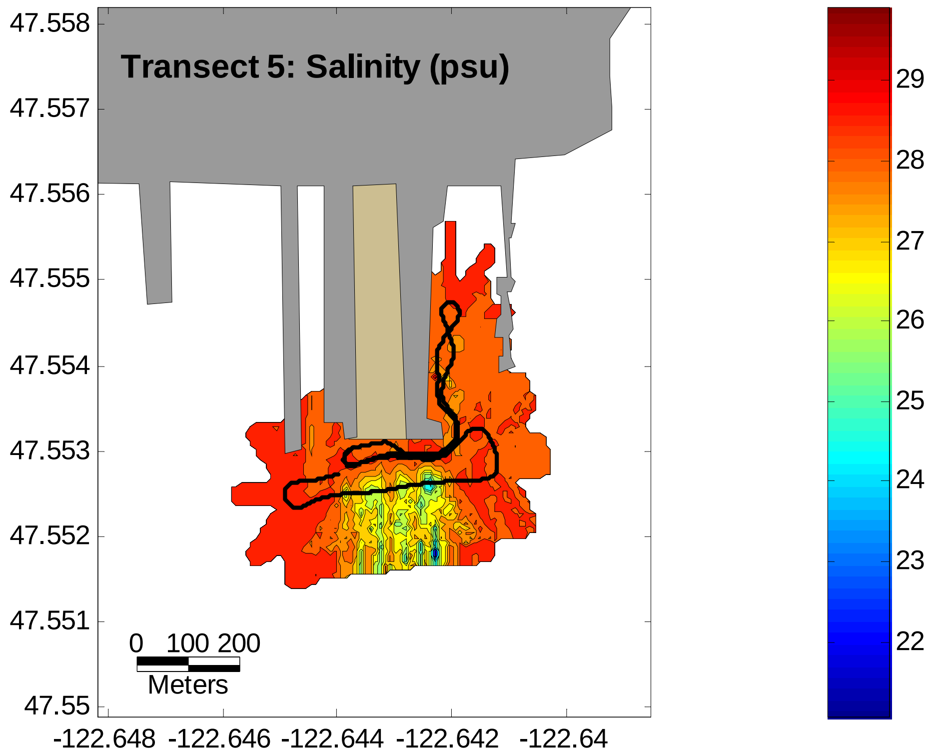
22


Transect 5: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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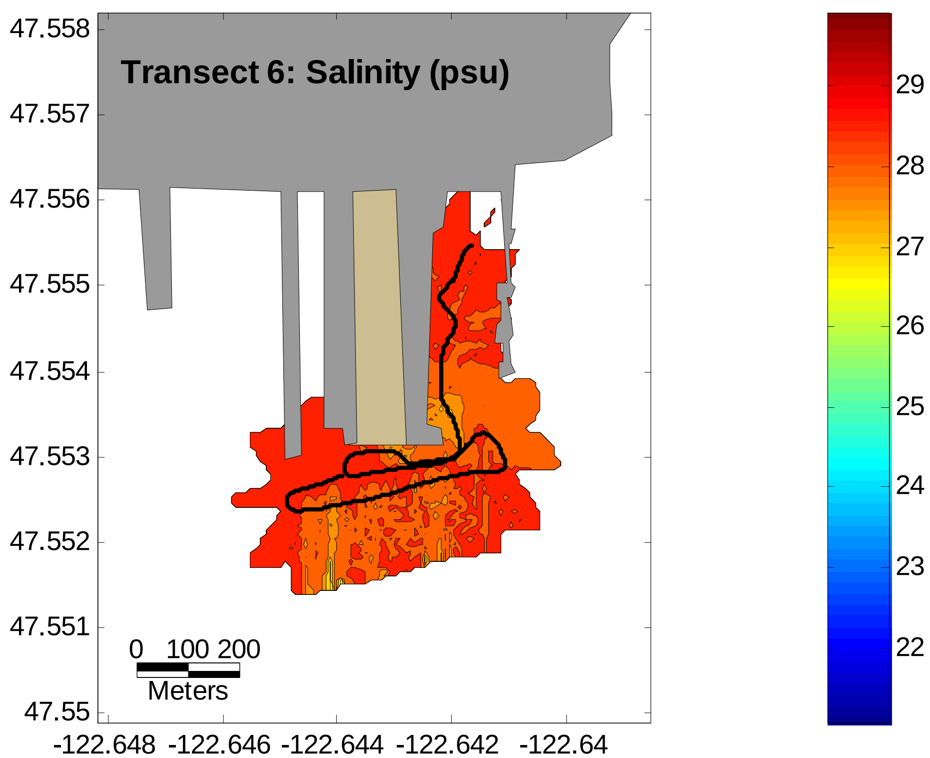
22


Transect 6: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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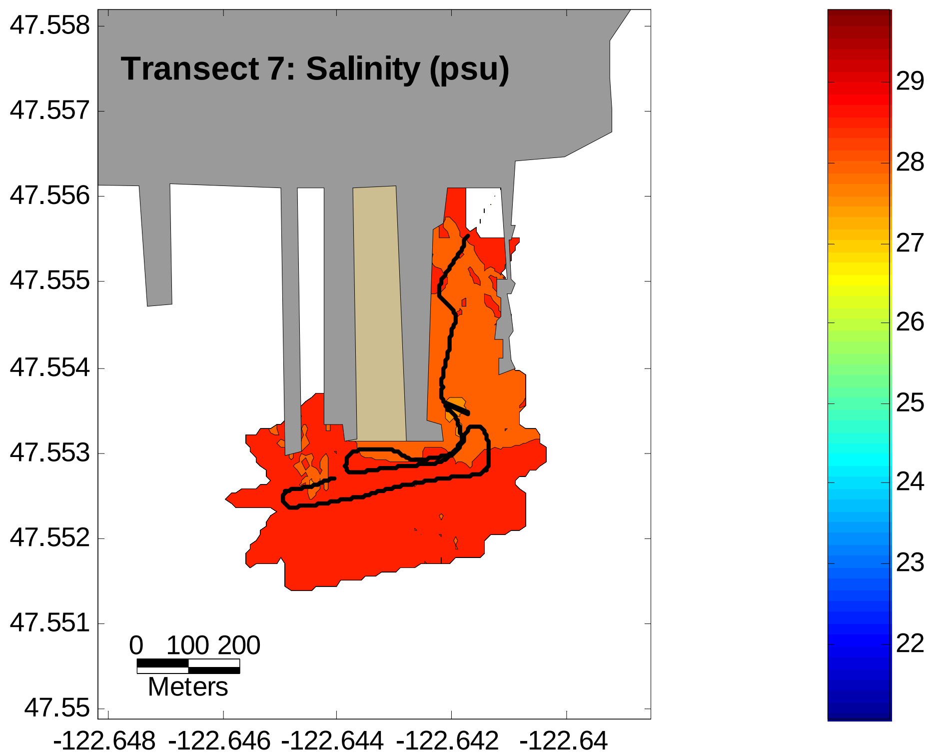
22


Transect 7: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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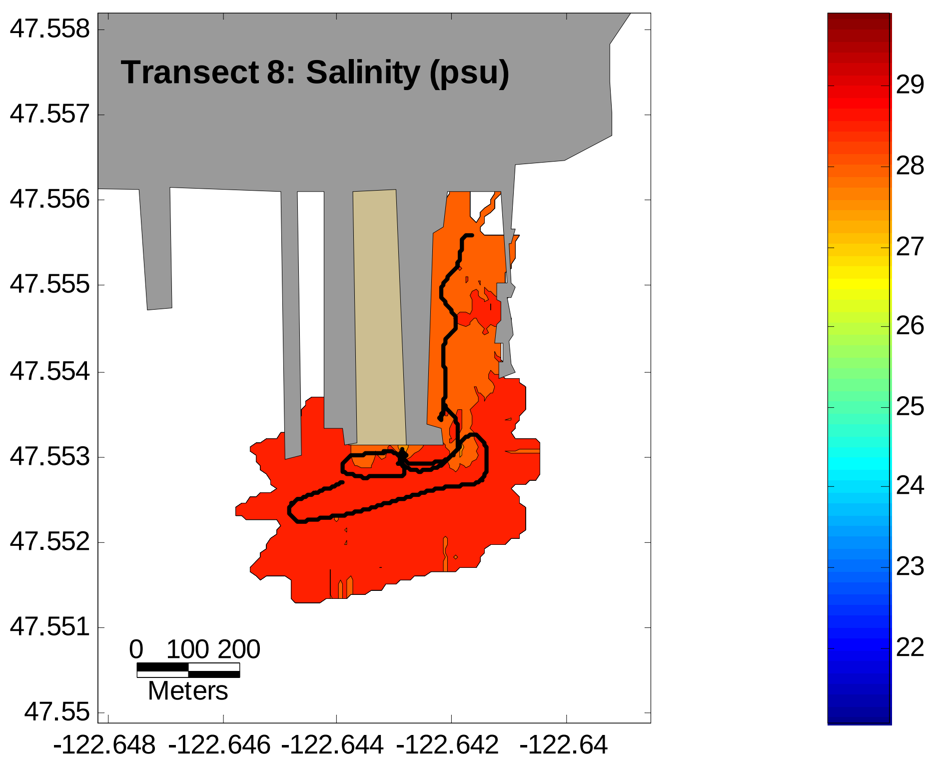
Transect 8: Salinity (psu)
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47.557
47.556
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47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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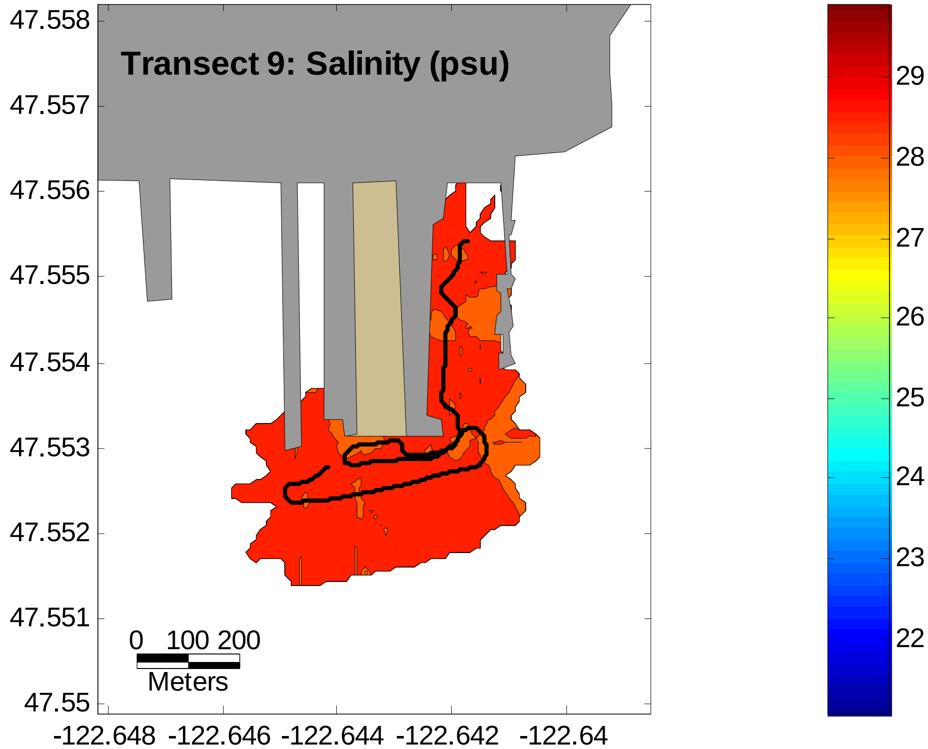
Transect 9: Salinity (psu)
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47.557
47.556
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47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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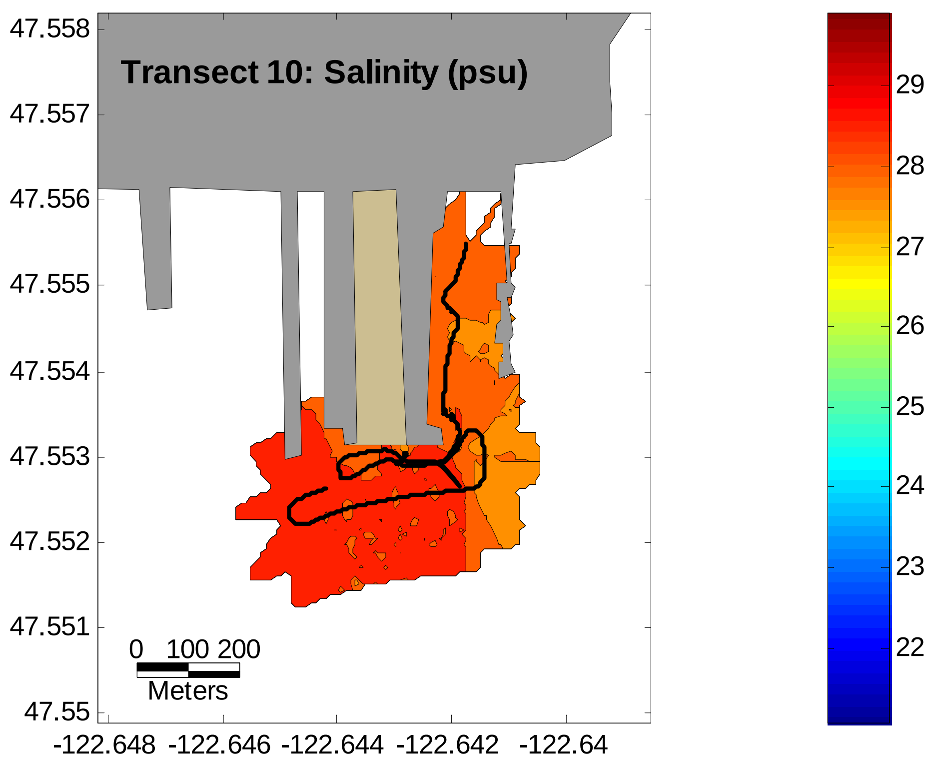
Transect 10: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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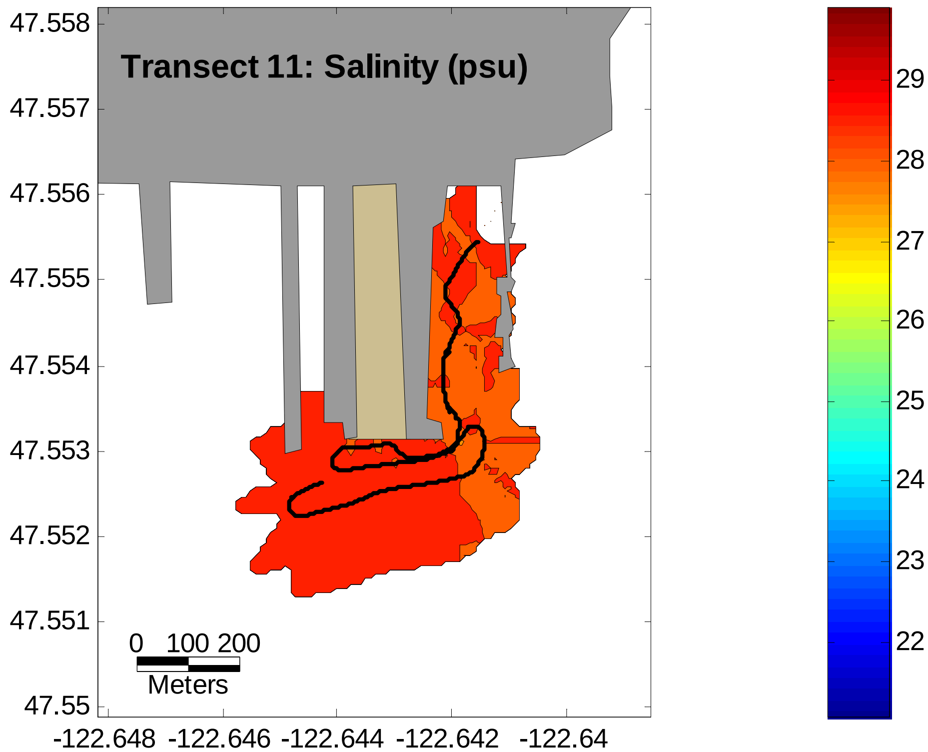
Transect 11: Salinity (psu)
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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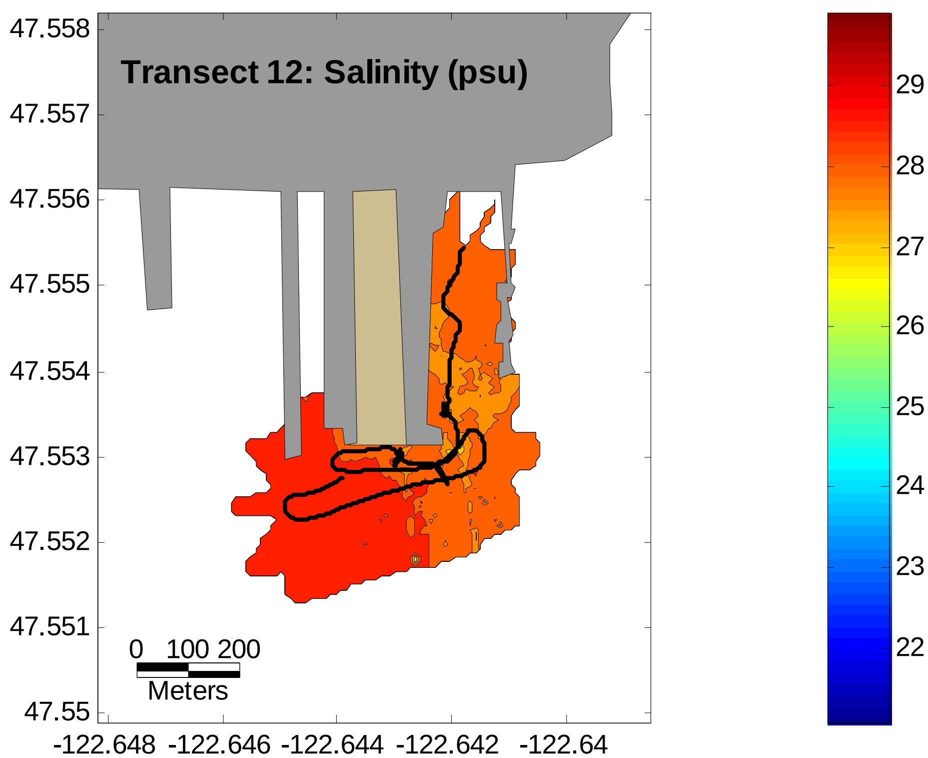
Transect 12: Salinity (psu)
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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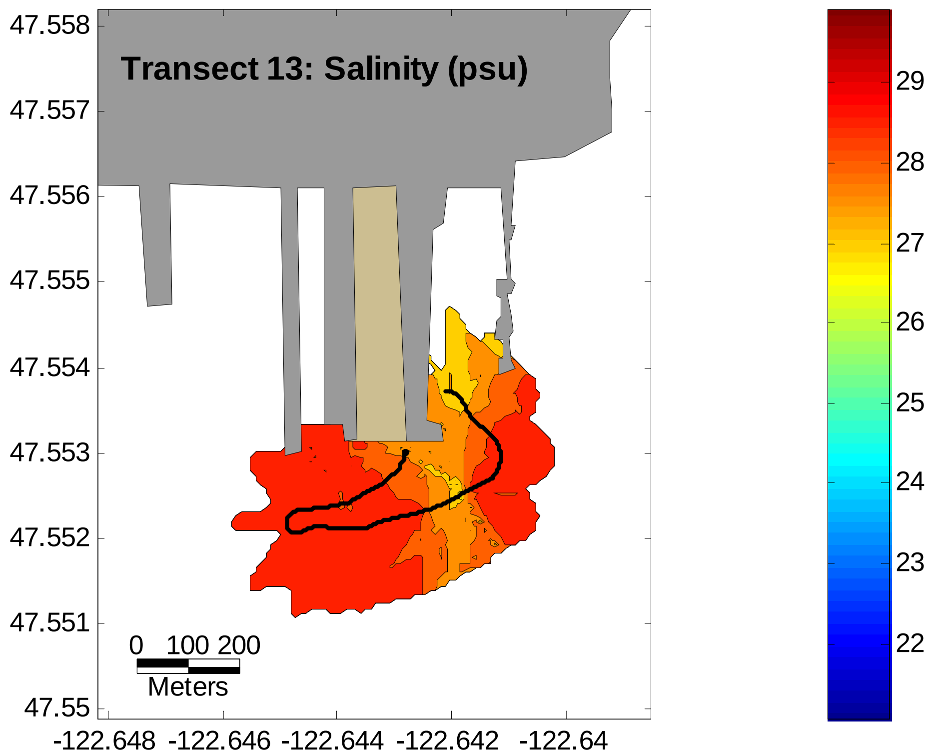
Transect 13: Salinity (psu)
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47.557
47.556
47.555
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47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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28
27
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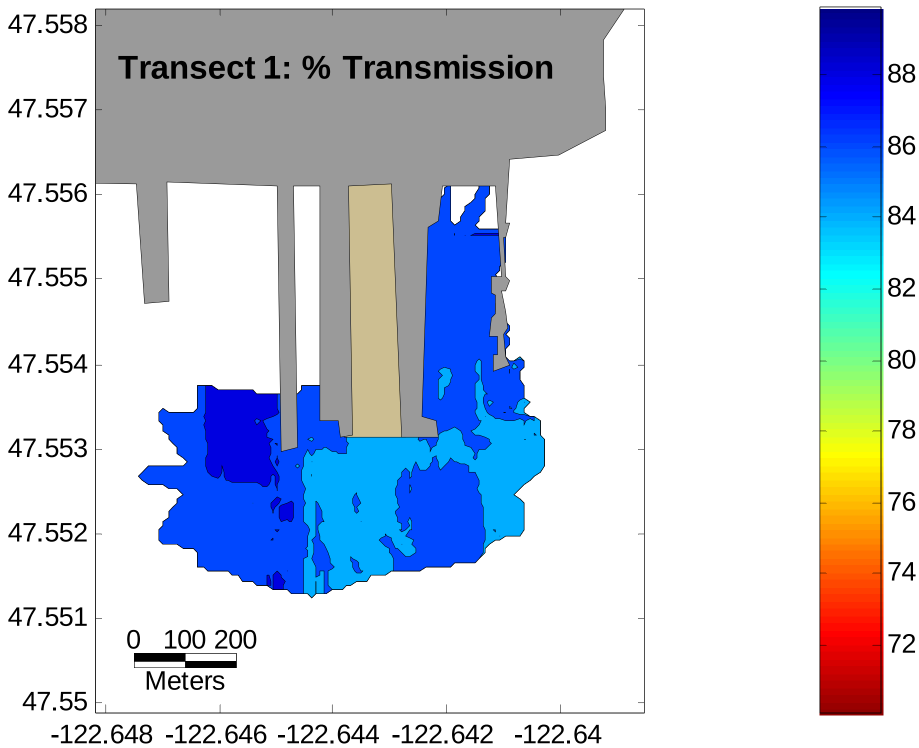
Transect 1: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
88
86
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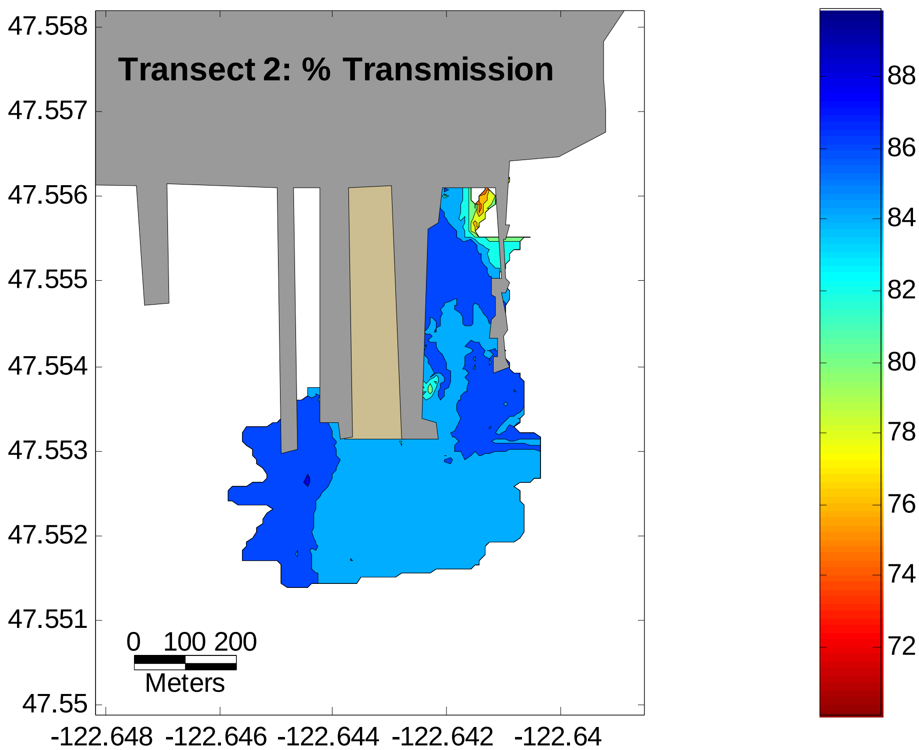
76
74
72


Transect 2: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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86
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82
80
78
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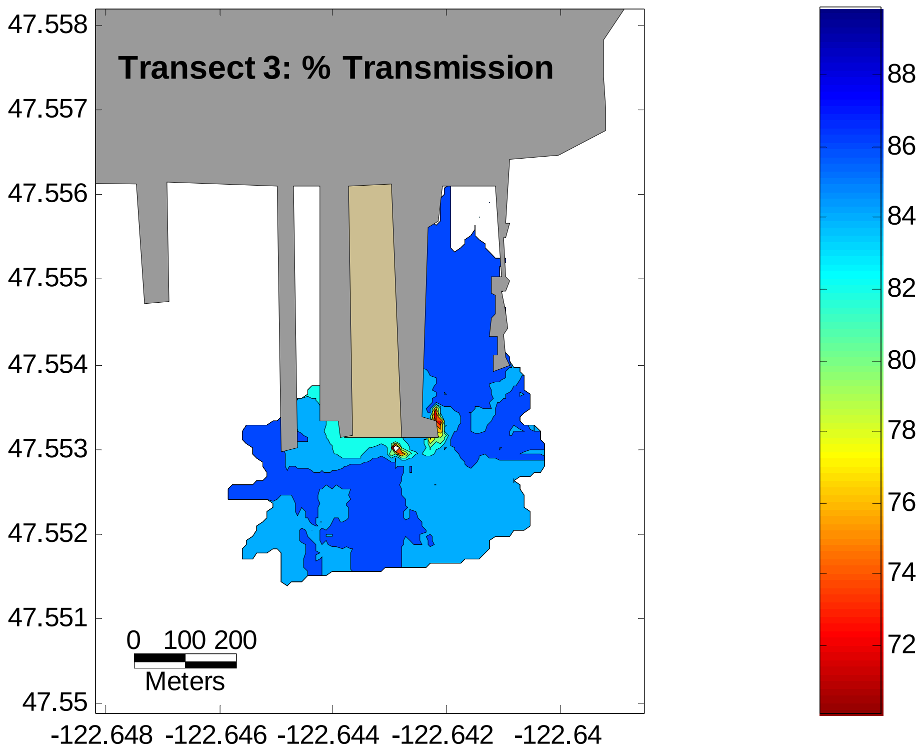
74
72



Transect 3: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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74
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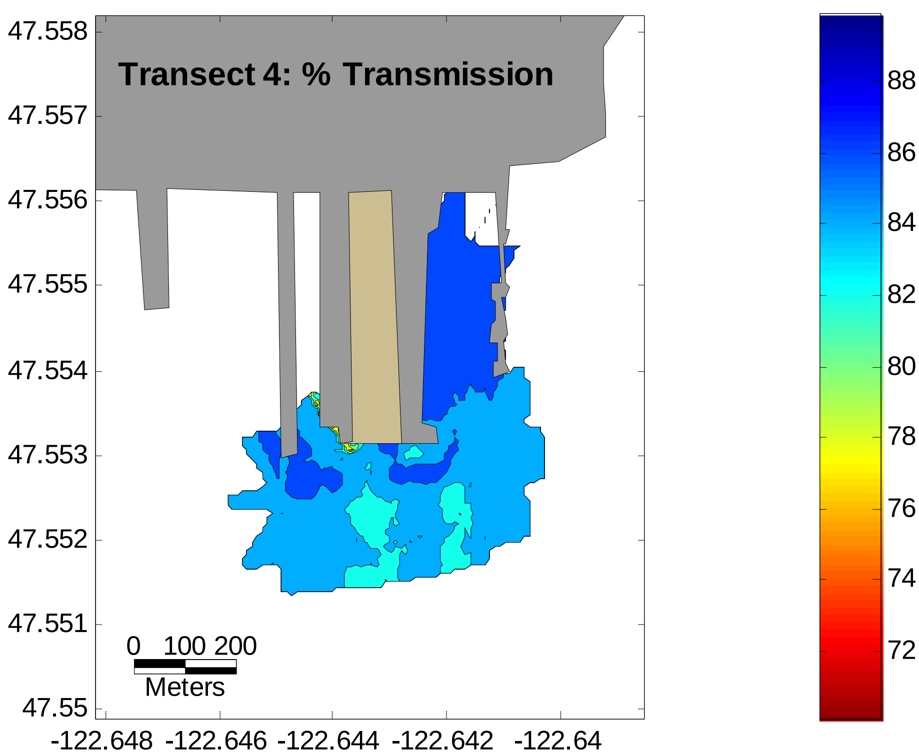

Transect 4: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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86
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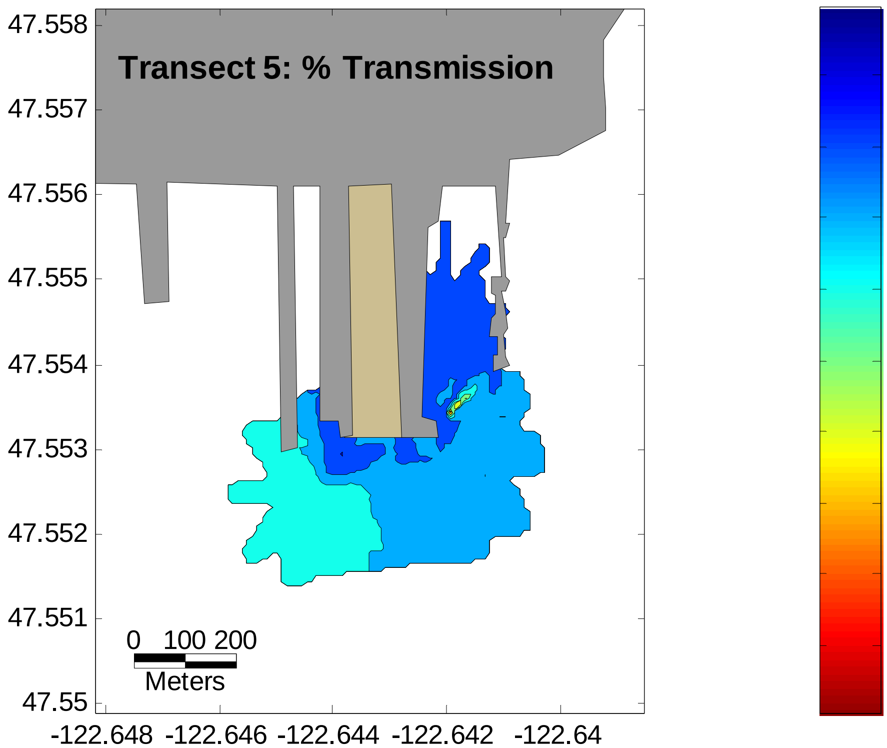
74
72


Transect 5: % Transmission
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
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Meters
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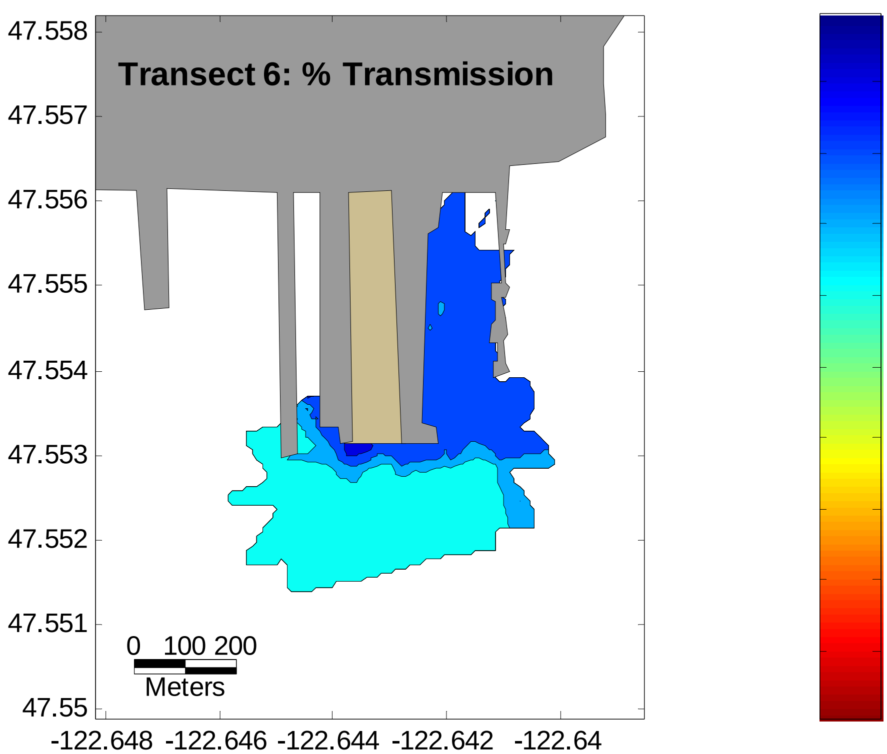
Transect 6: % Transmission
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
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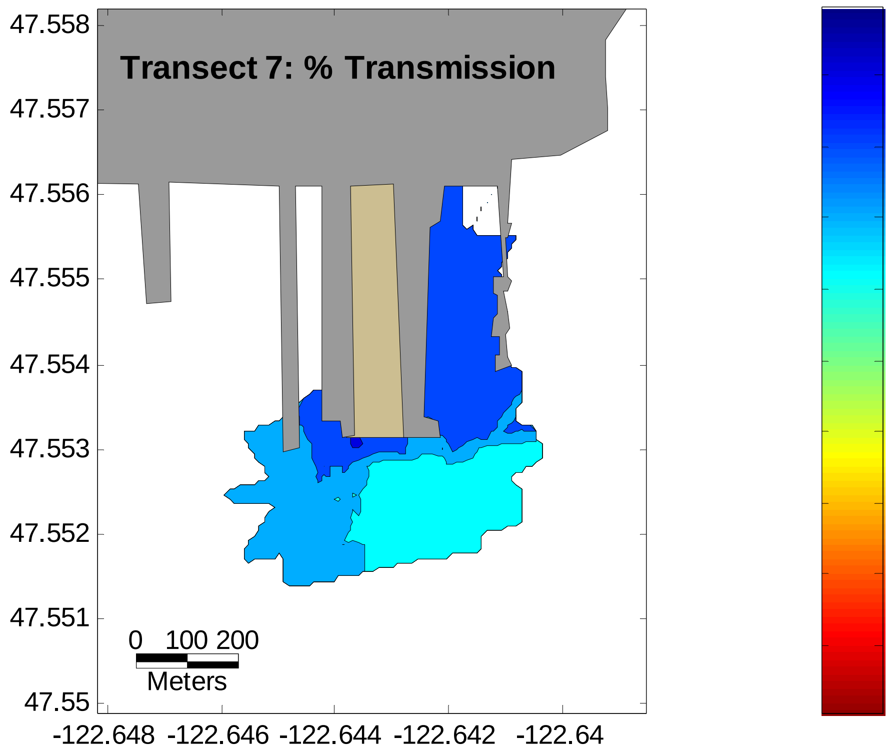
Transect 7: % Transmission
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
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-122.642
-122.64
0 100 200
Meters
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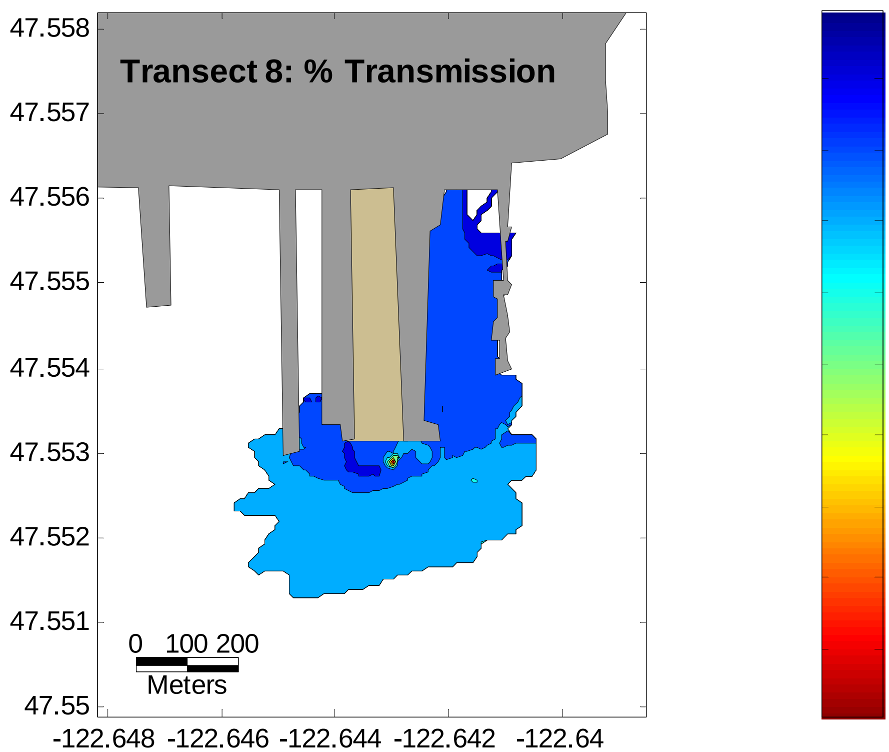
76
74
72


Transect 8: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
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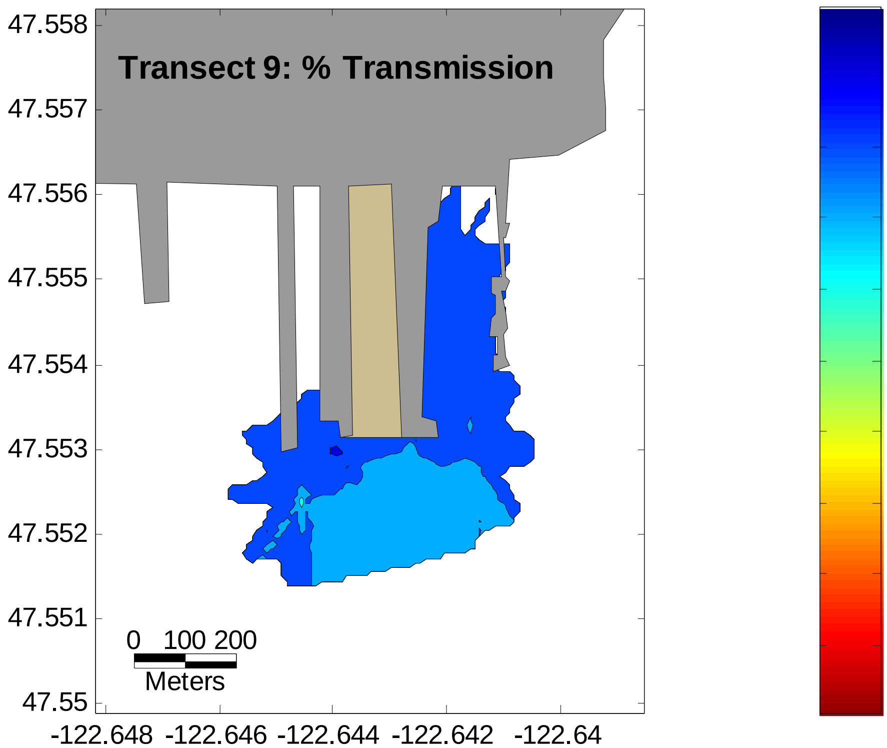
76
74
72



Transect 9: % Transmission
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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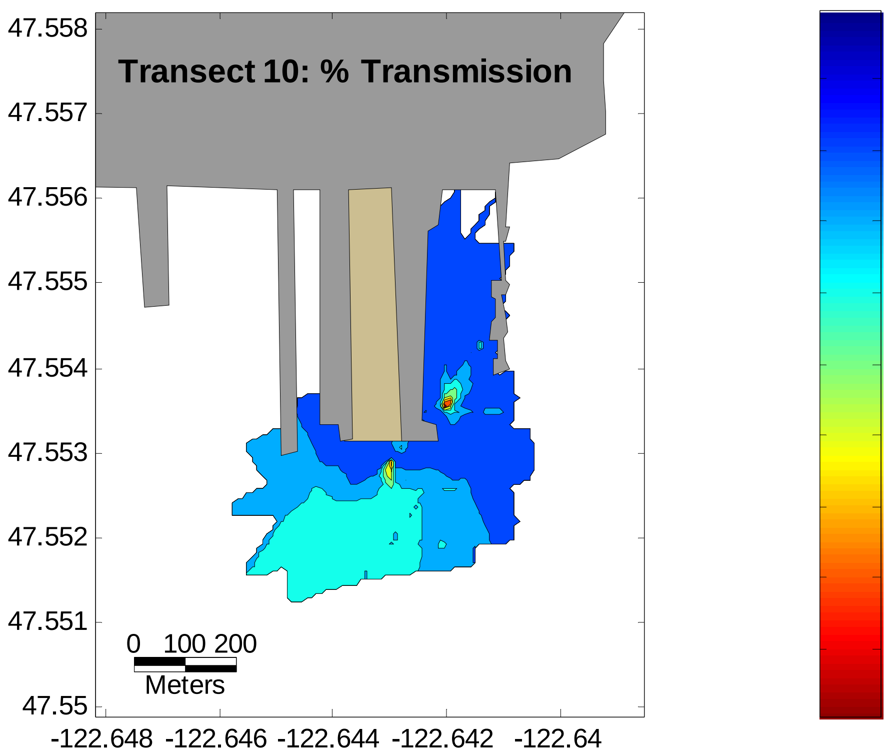

Transect 10: % Transmission
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
88
86
84
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80
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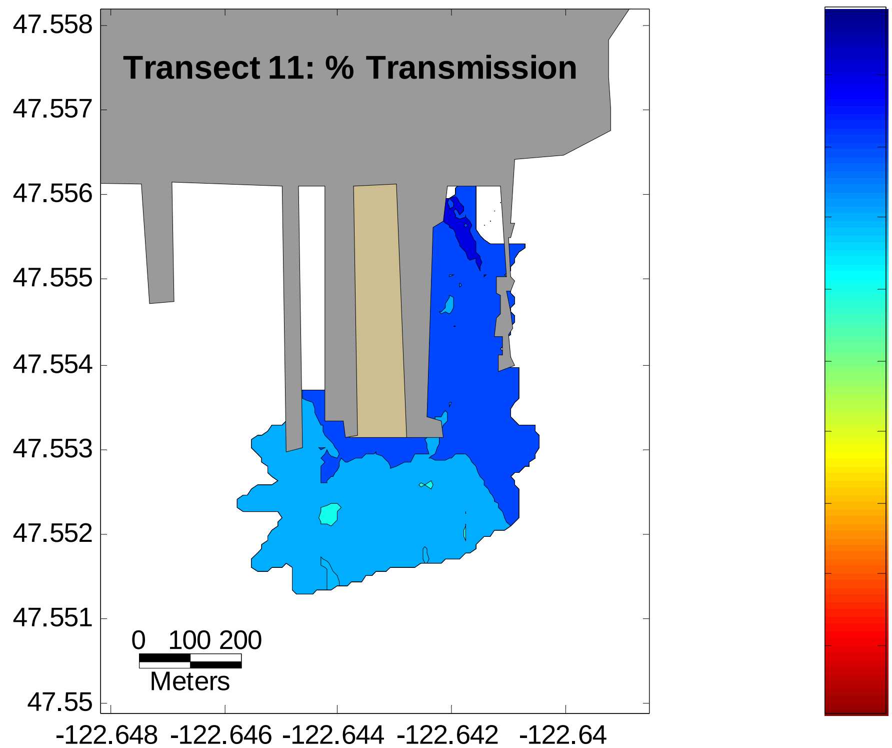
76
74
72


Transect 11: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
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-122.642
-122.64
0 100 200
Meters
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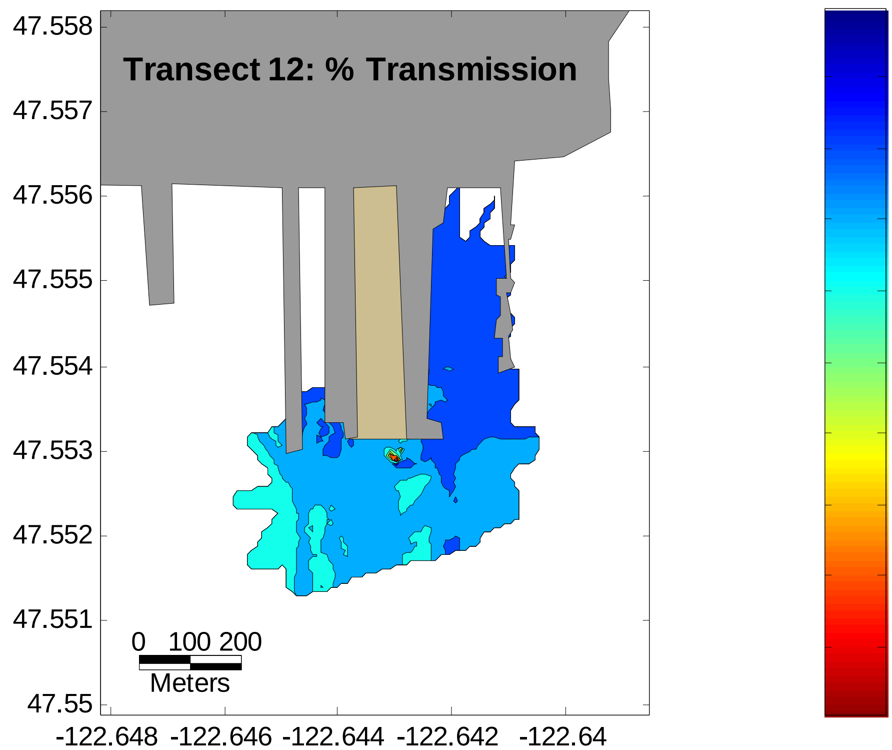
86
84
82
80
78
76
74
72


Transect 12: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
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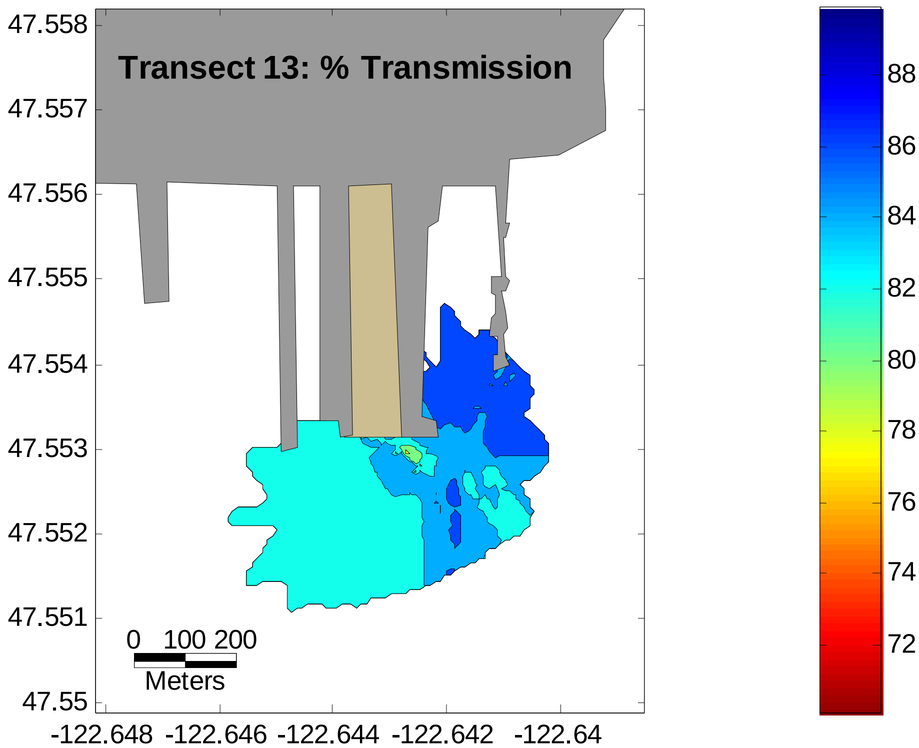
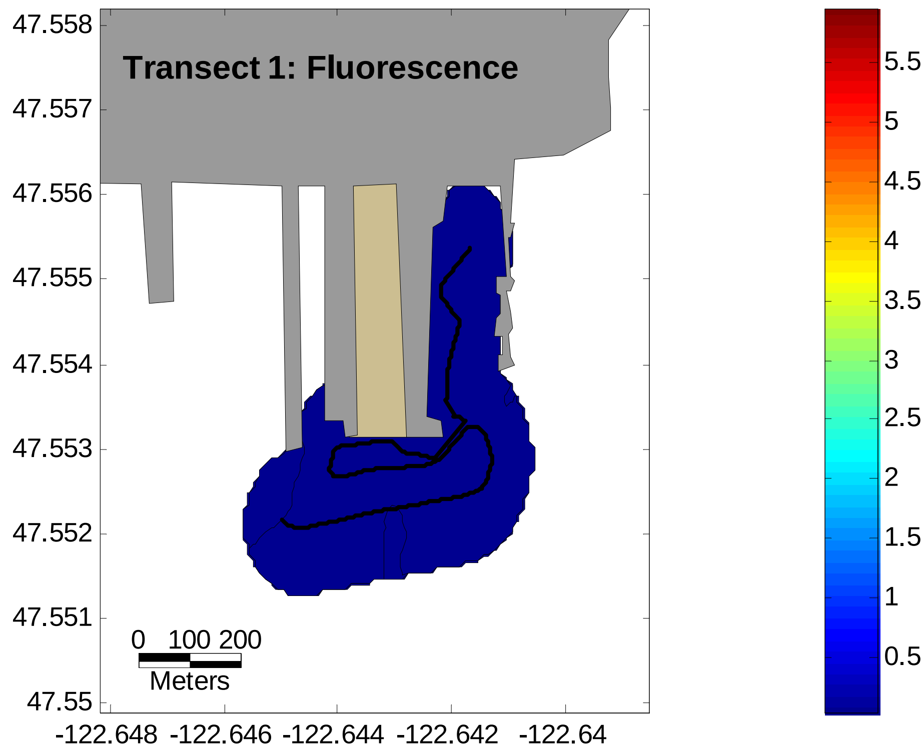
86
84
82
80
78
76
74
72

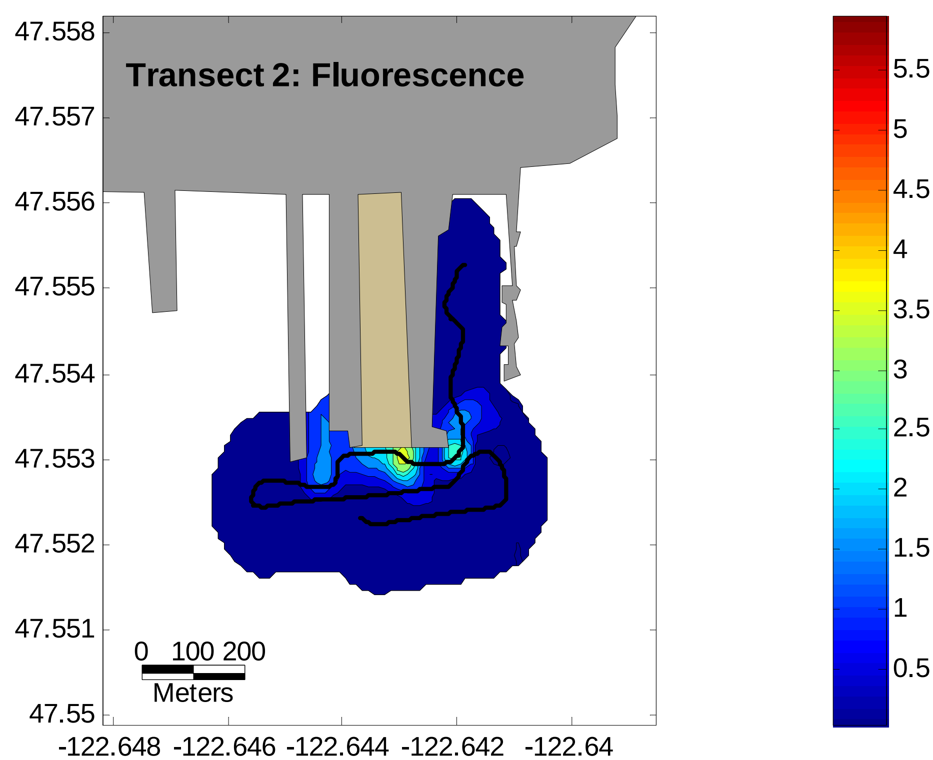


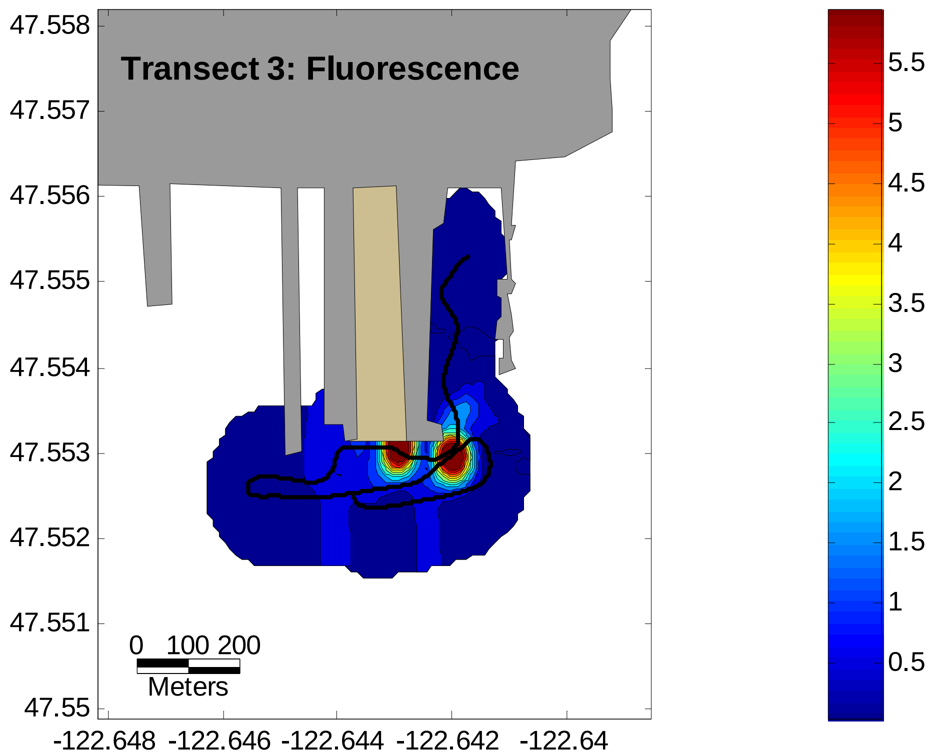
Transect 13: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
88
86
84
82
80
78
76
74
72

APPENDIX B- RUN 2 TRANSECT DATA

TRANSECT	Start	End	Tide (cm)
1	22.5361	22.5473	-6.1
2	22.5708	22.5806	-18.3
3	22.5875	22.5975	-14.6
4	22.6028	22.6134	-3.2
5	22.6257	22.6359	19.5
6	22.6410	22.6519	40.5
7	22.6567	22.6671	63.1
8	22.6743	22.6843	94.7
9	22.6889	22.7012	123.8
10	22.7056	22.7179	156.9
11	22.7313	22.7448	205.0
12	22.7493	22.7616	236.6
13	22.7660	22.7754	261.9
14	22.7903	22.8013	295.6
15	22.8056	22.8185	313.6


Transect 1: Fluorescence
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 2: Fluorescence
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 3: Fluorescence
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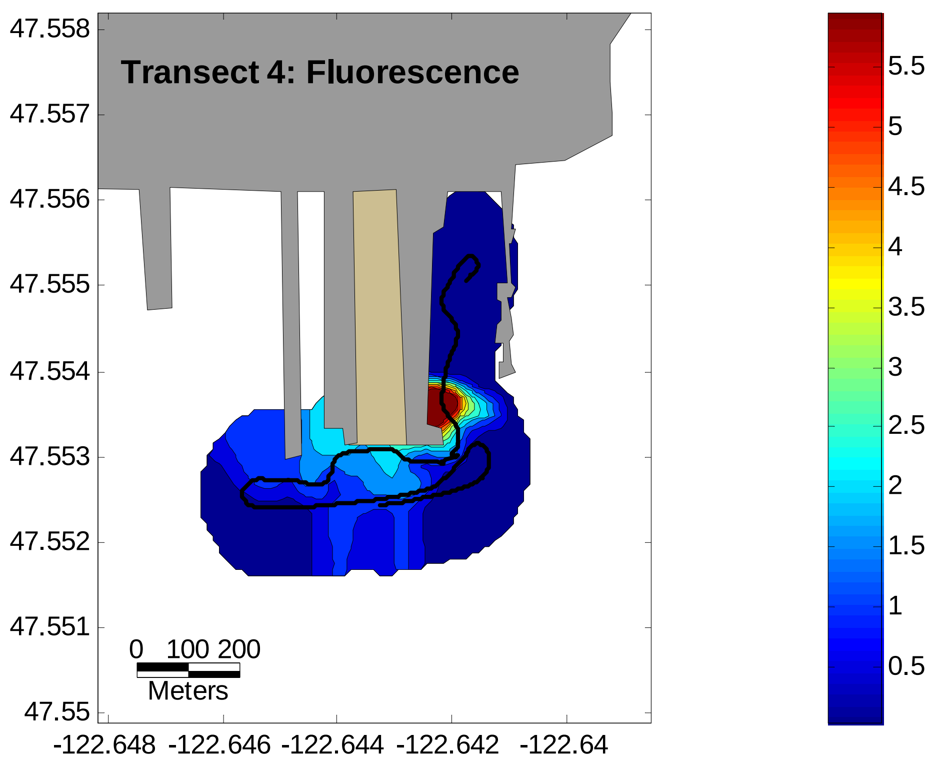
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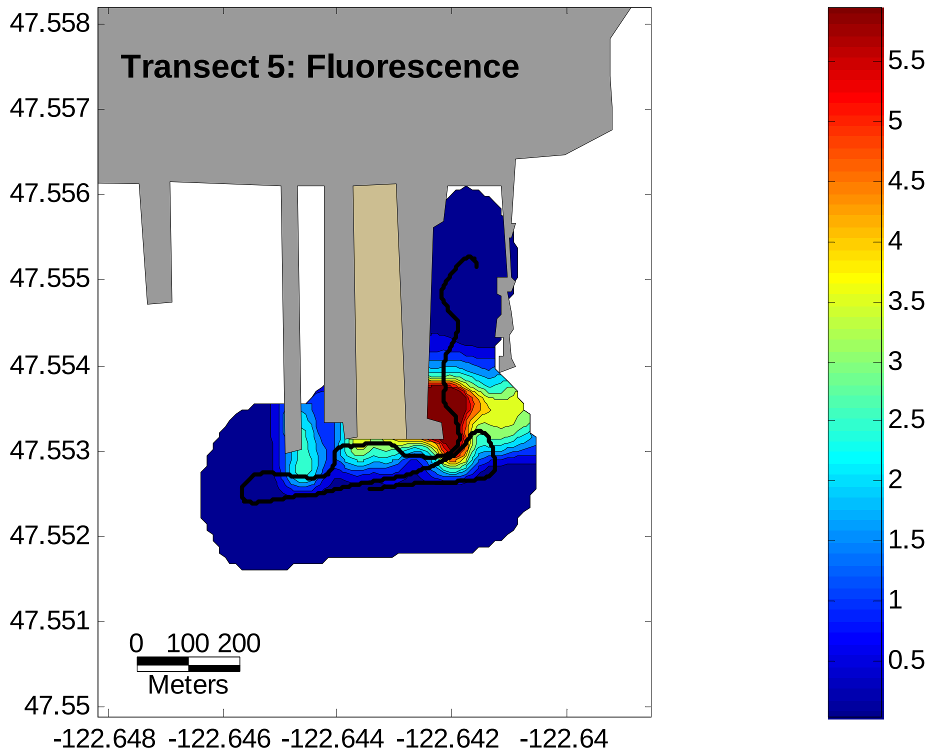
Transcect 5: Fluorescence
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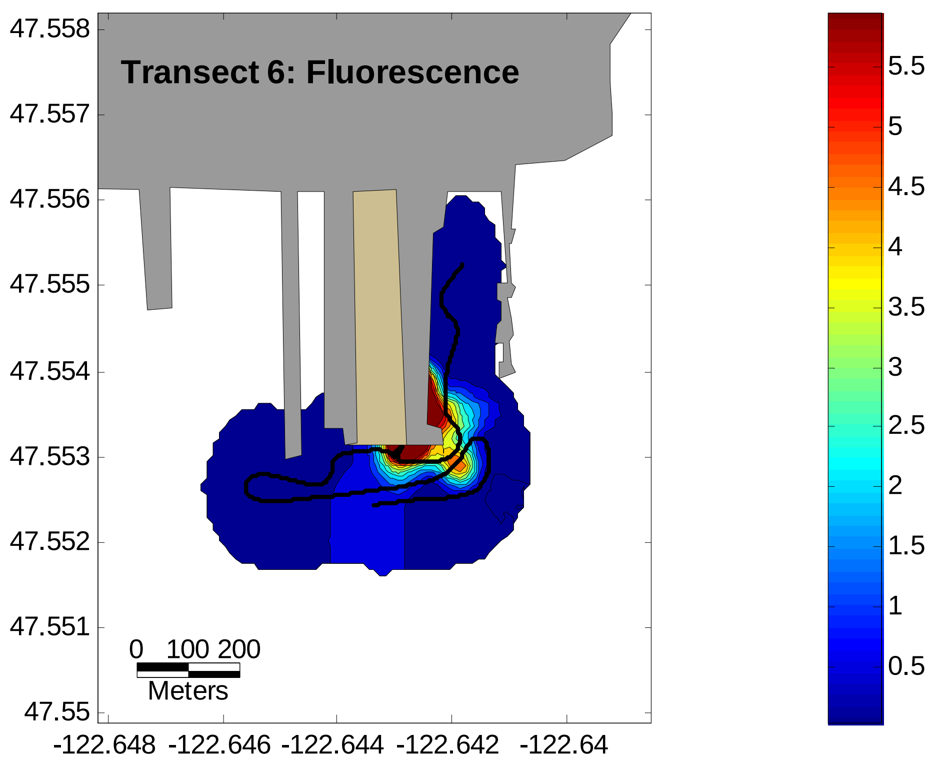
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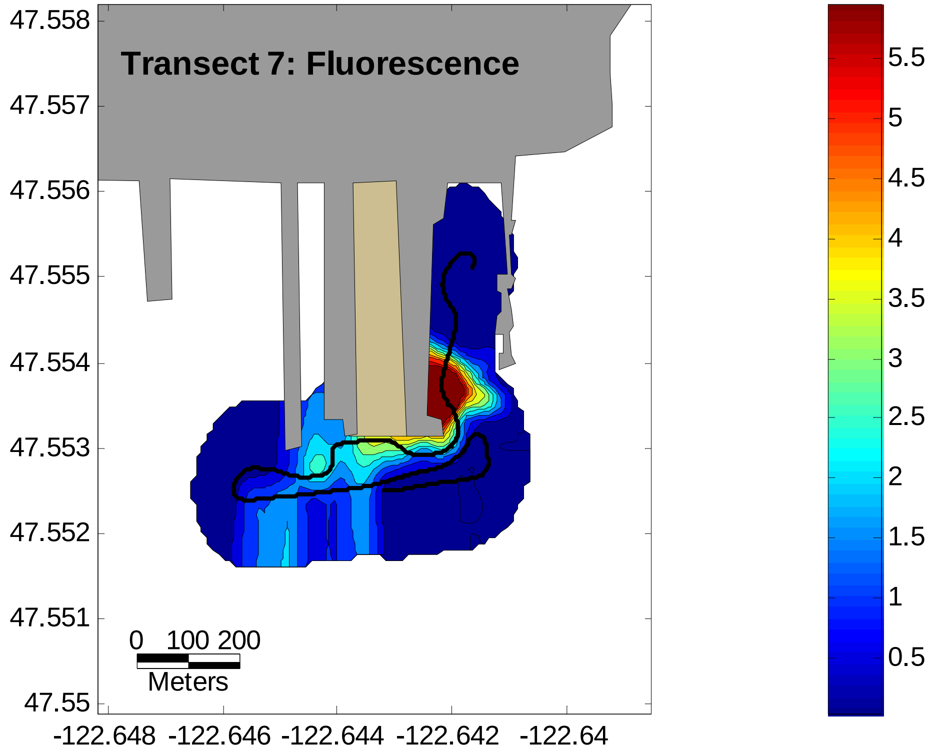
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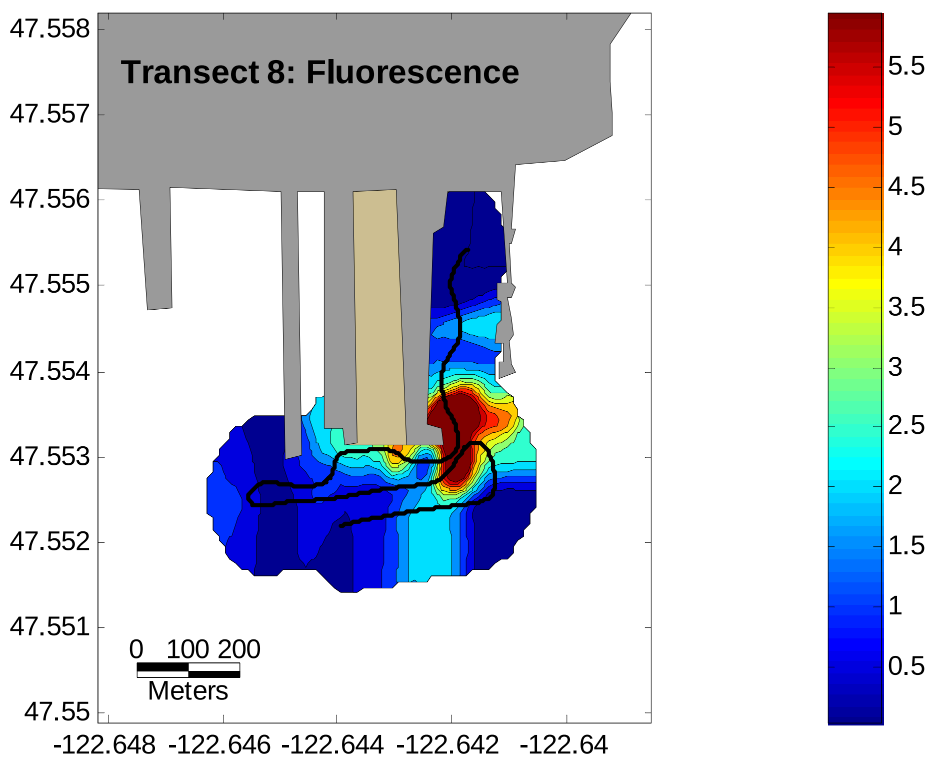
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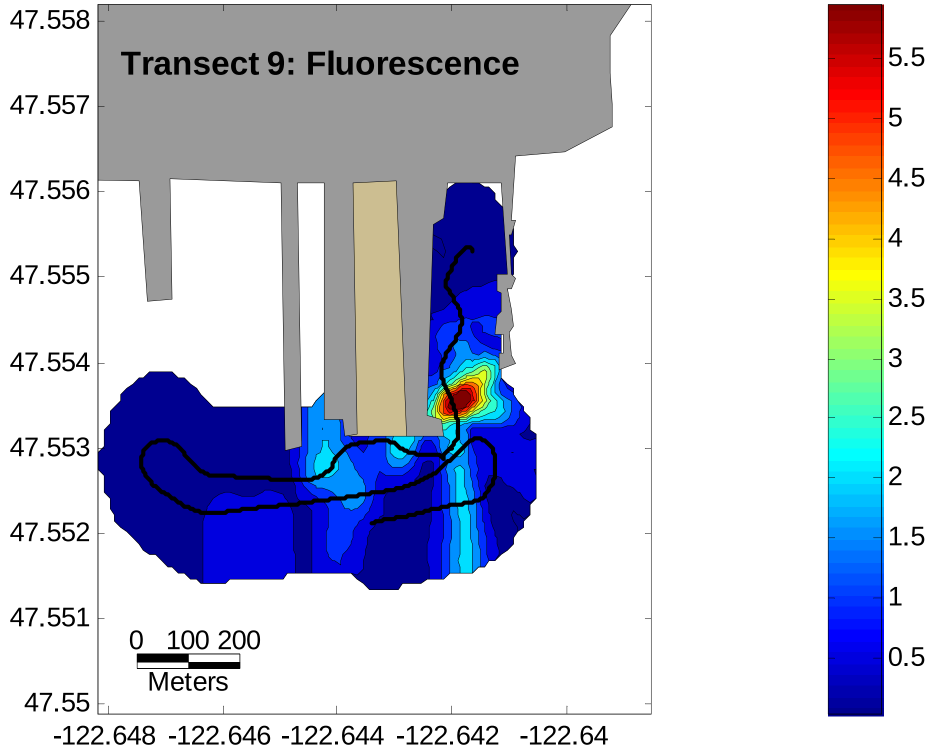
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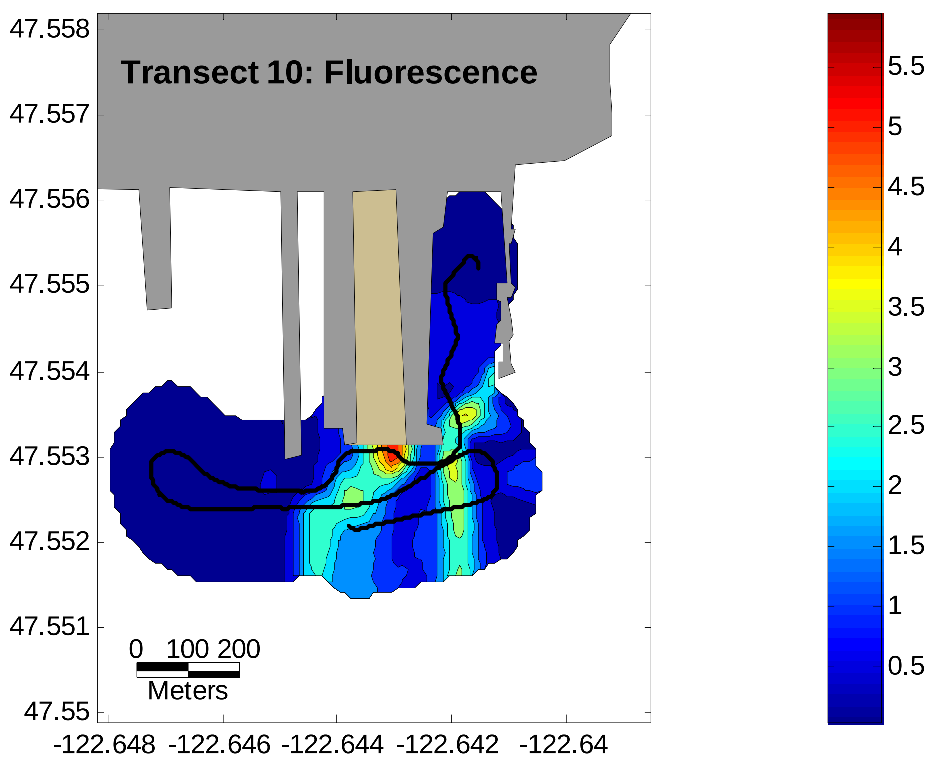
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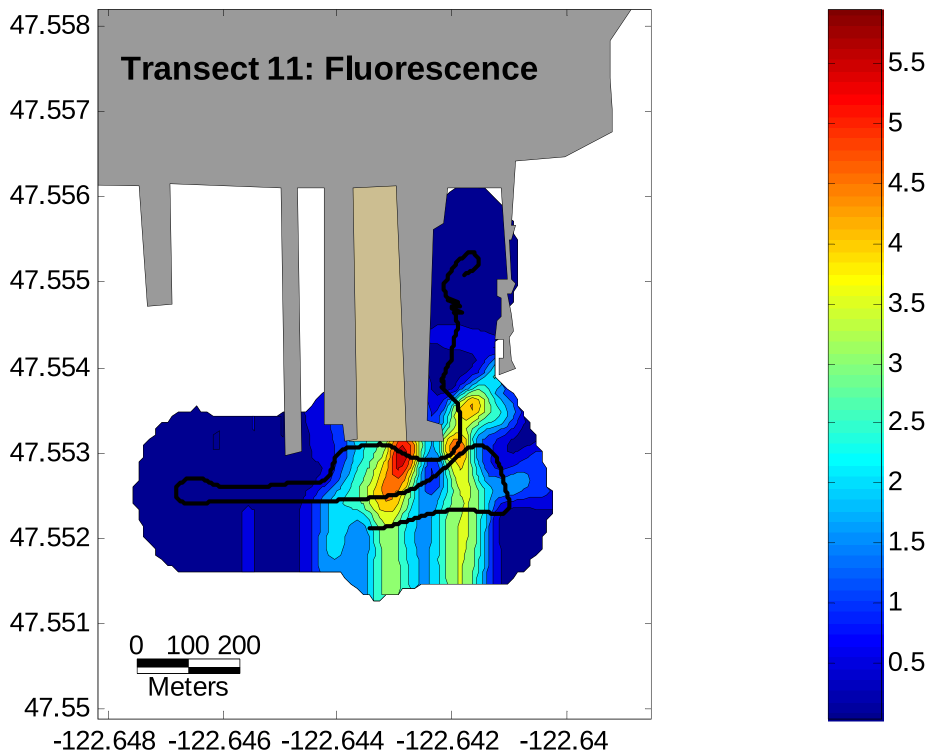
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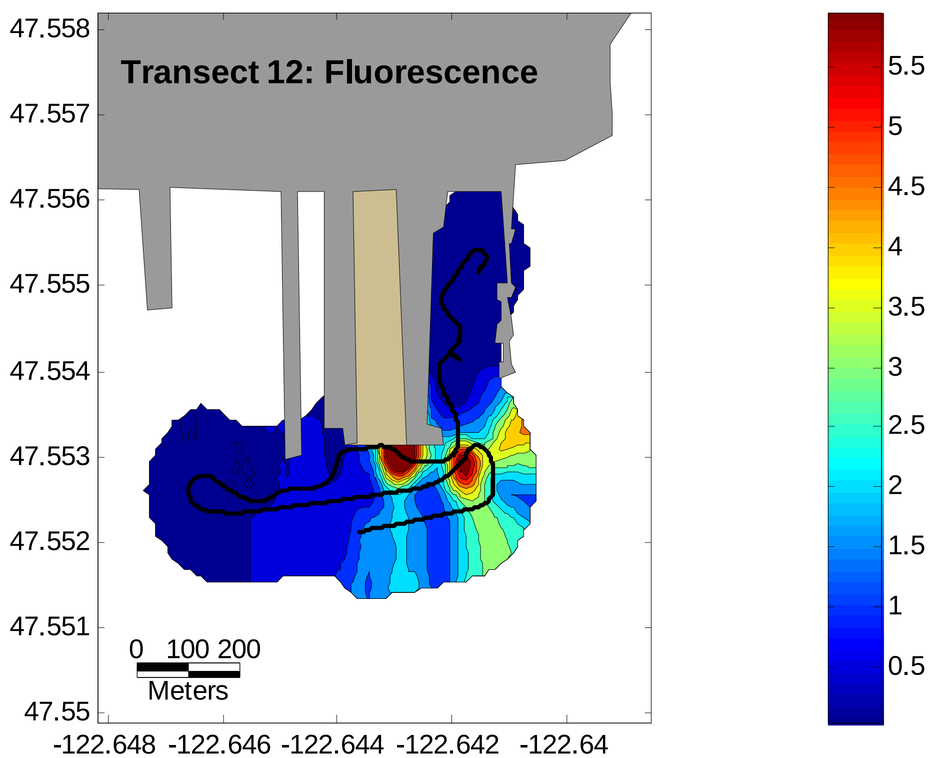
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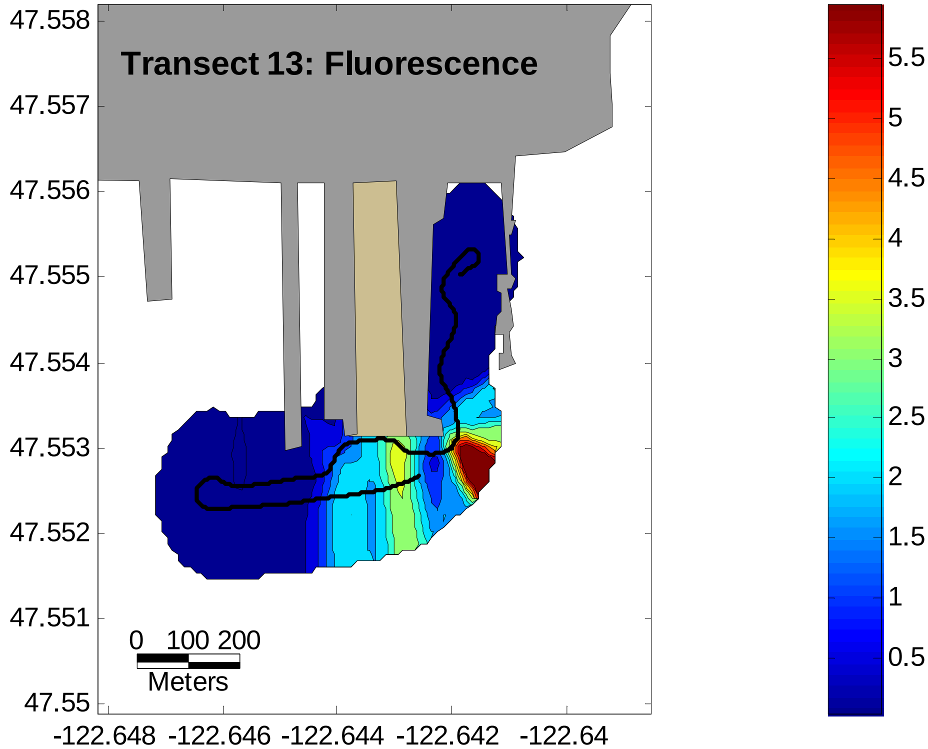
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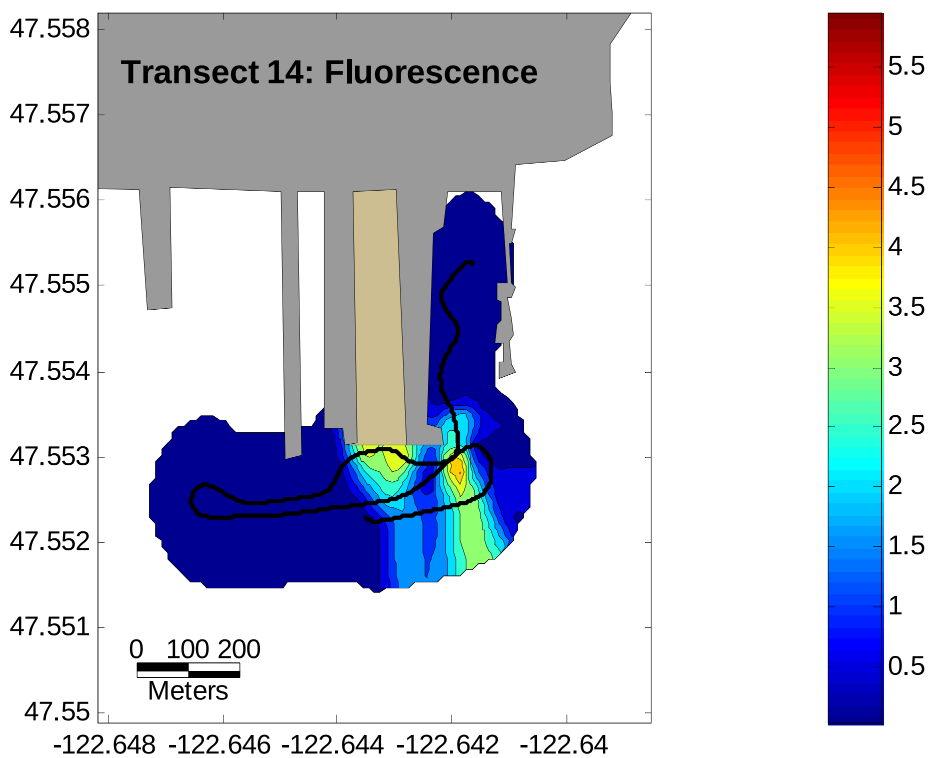
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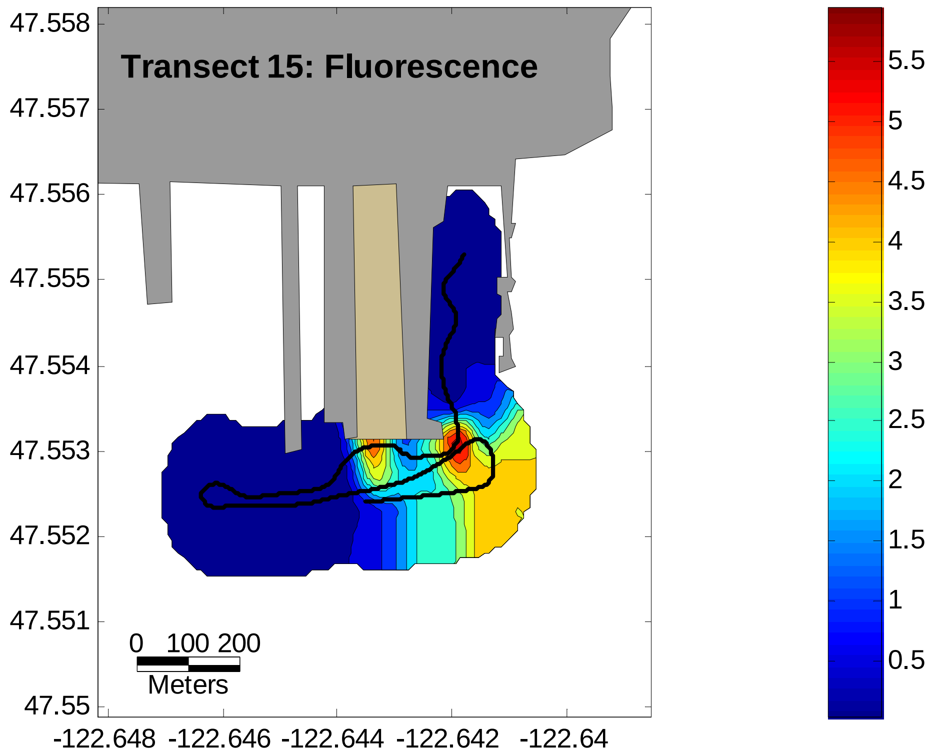

Transcect 15: Fluorescence
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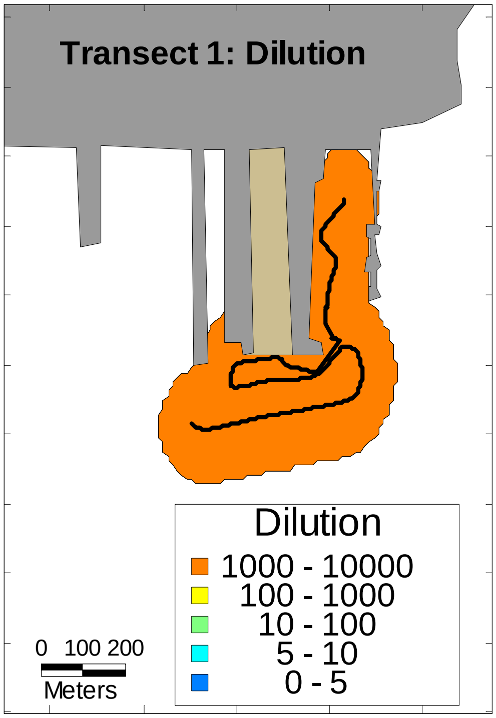
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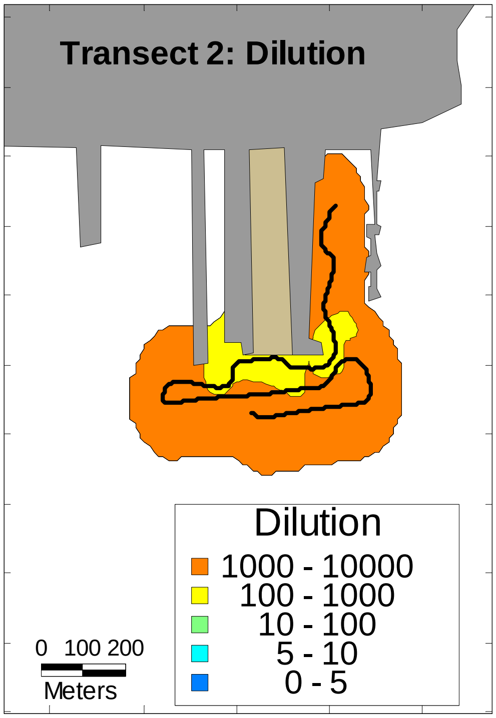
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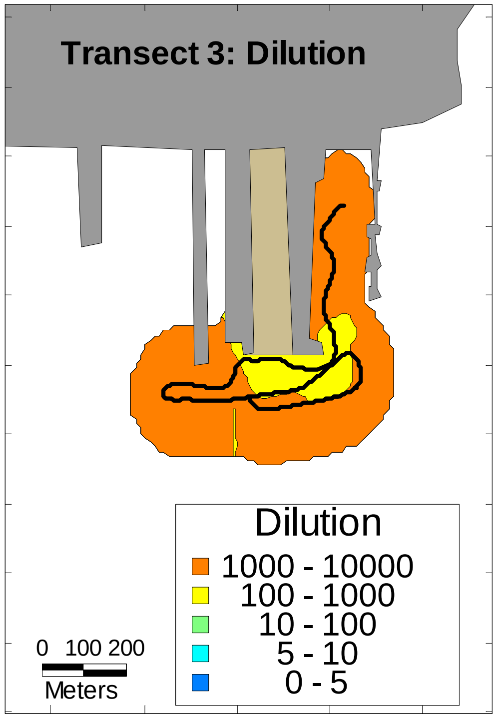
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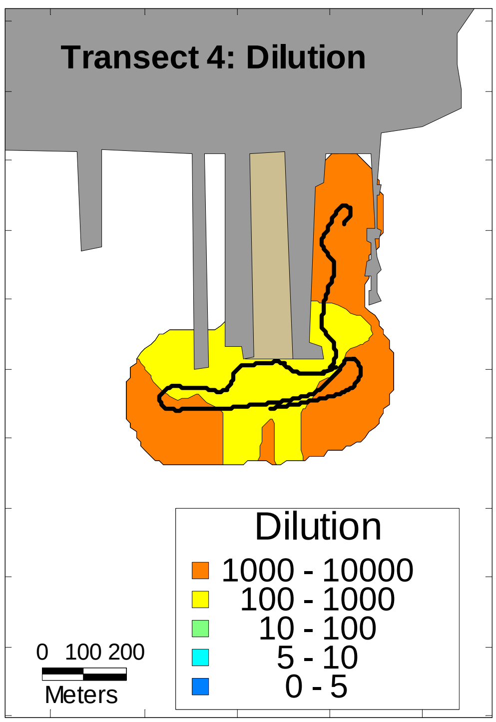
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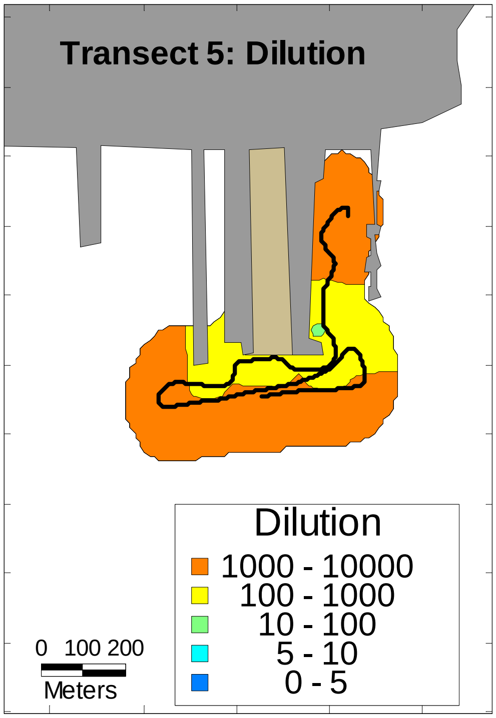
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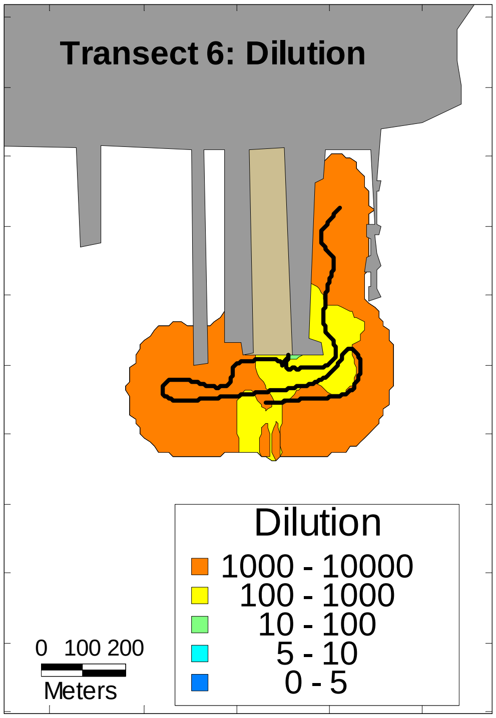
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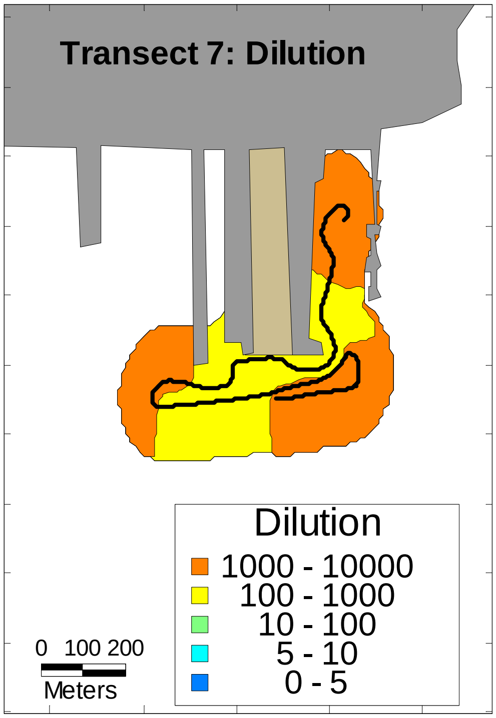
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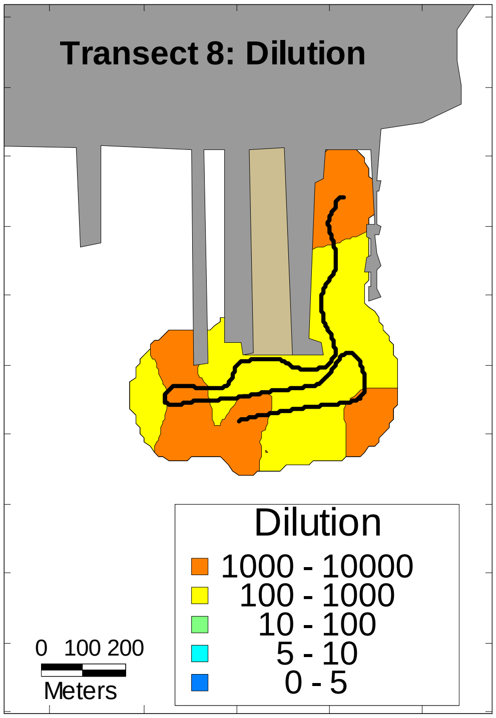
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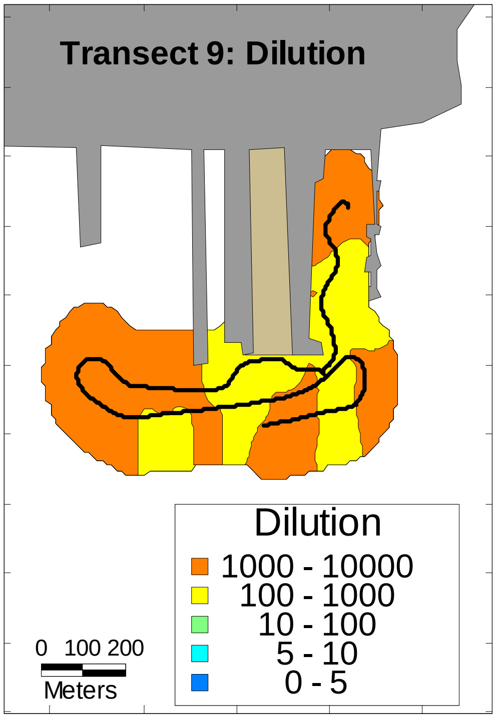
Transect 9: Dilution
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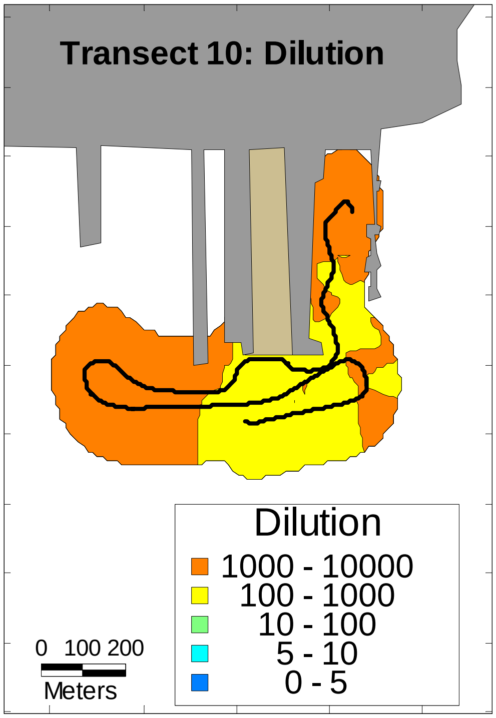
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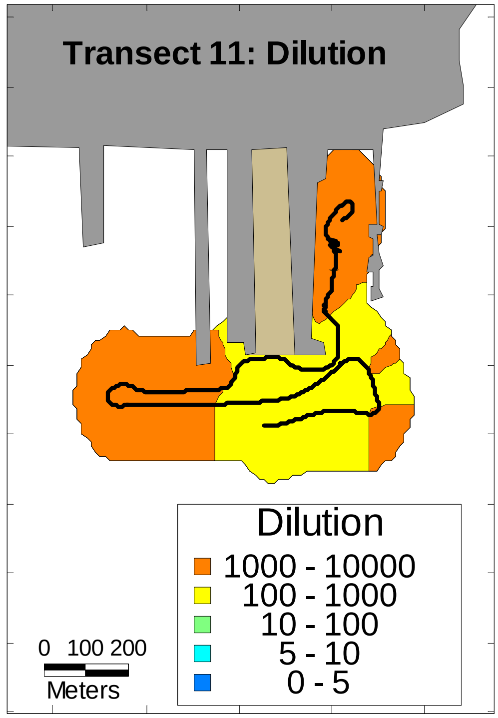
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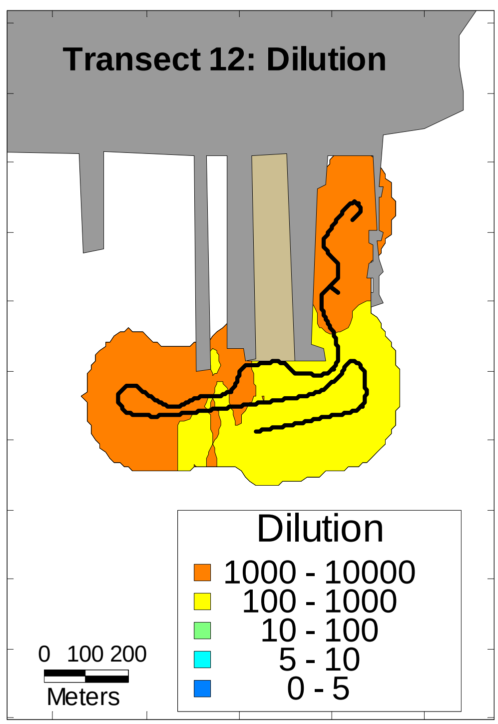
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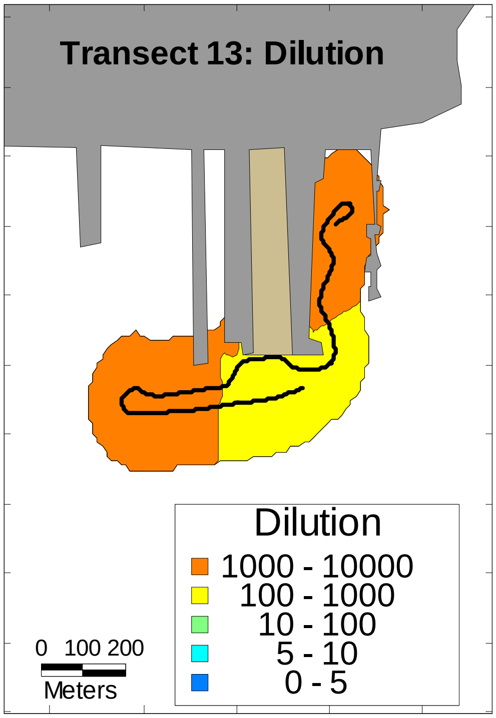
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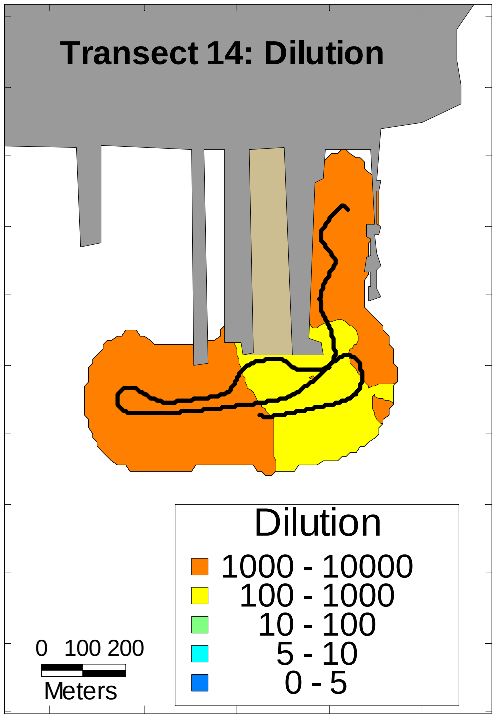
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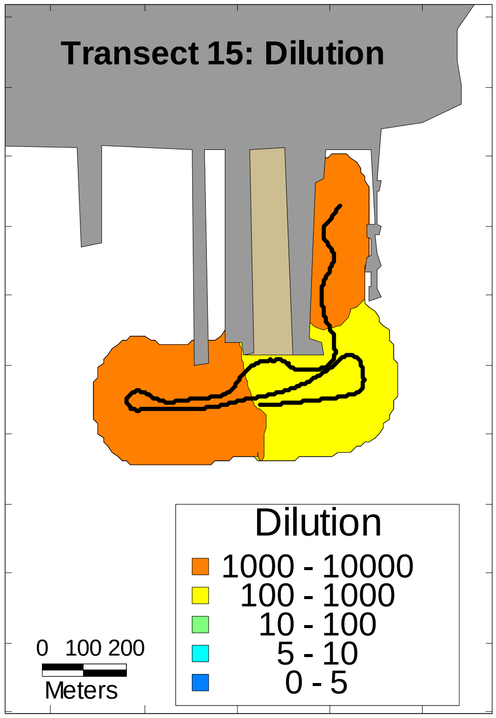
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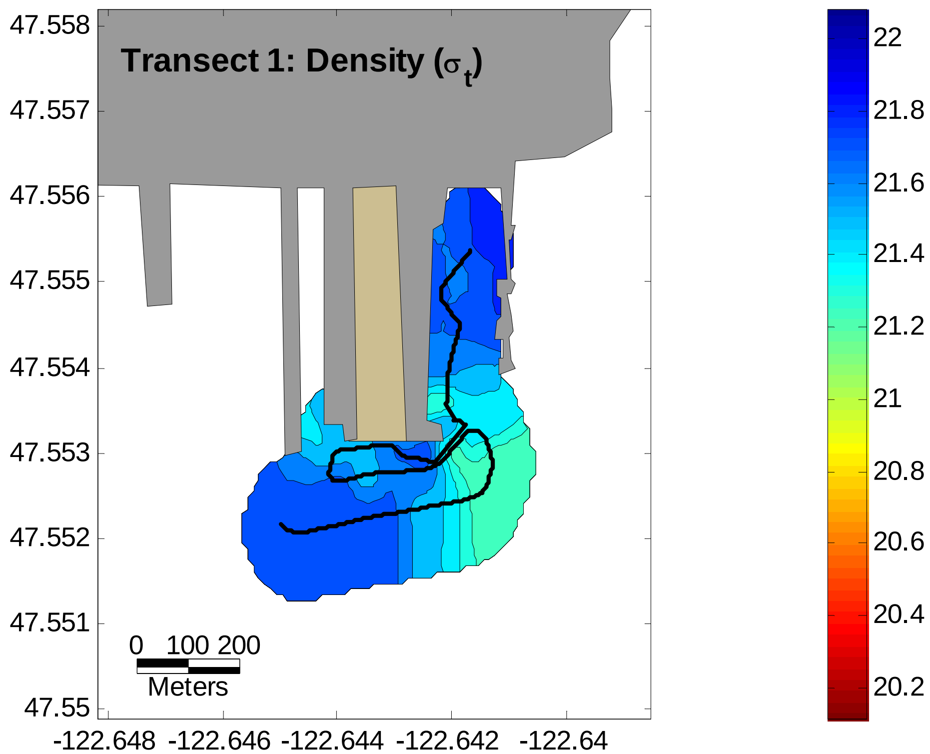
Transect 1: Density (σ_t)
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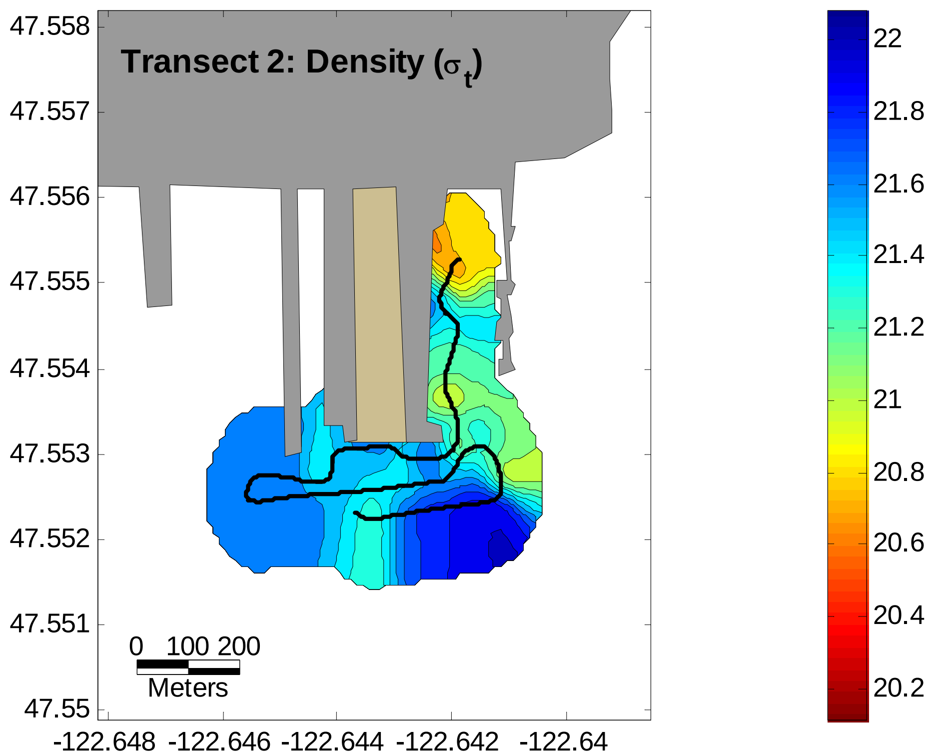
Transect 2: Density (σ_t)
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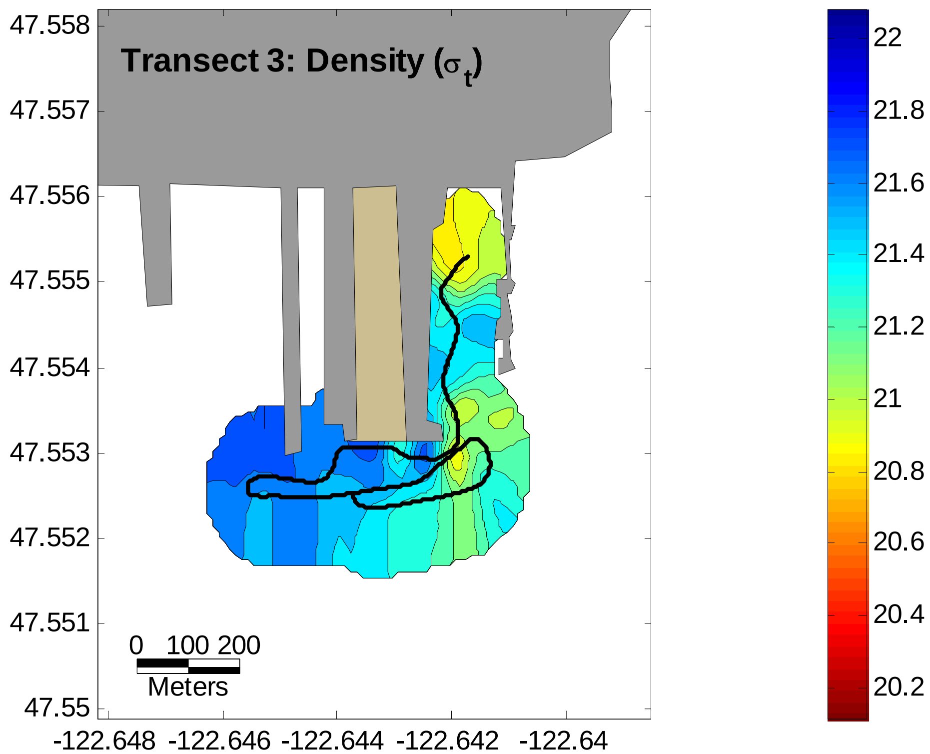
Transect 3: Density (σ_t)
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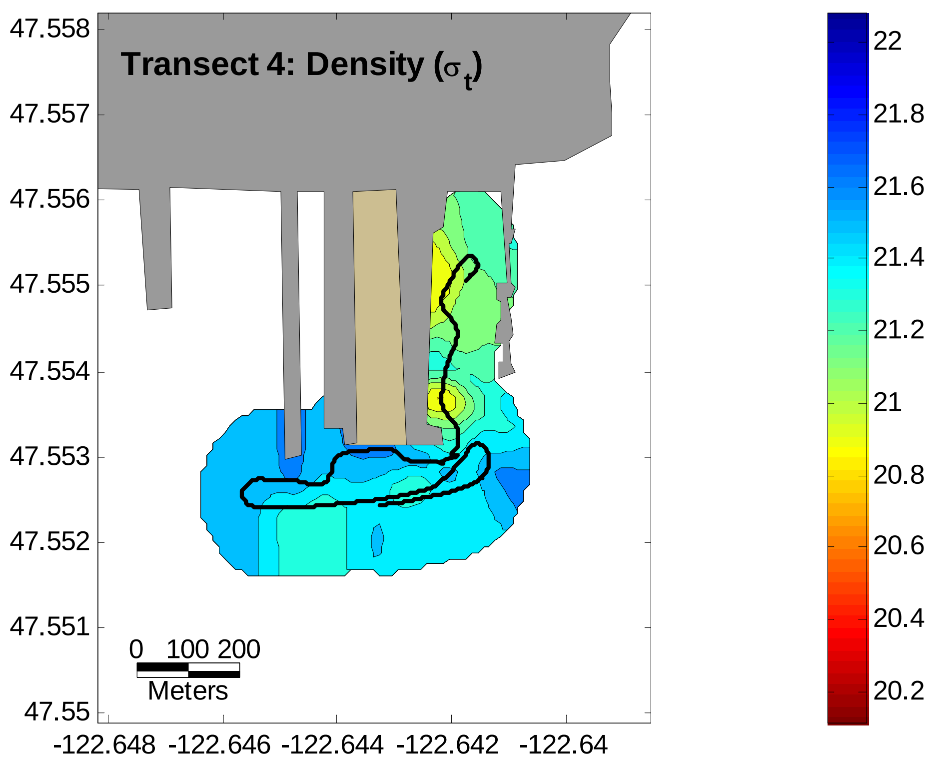
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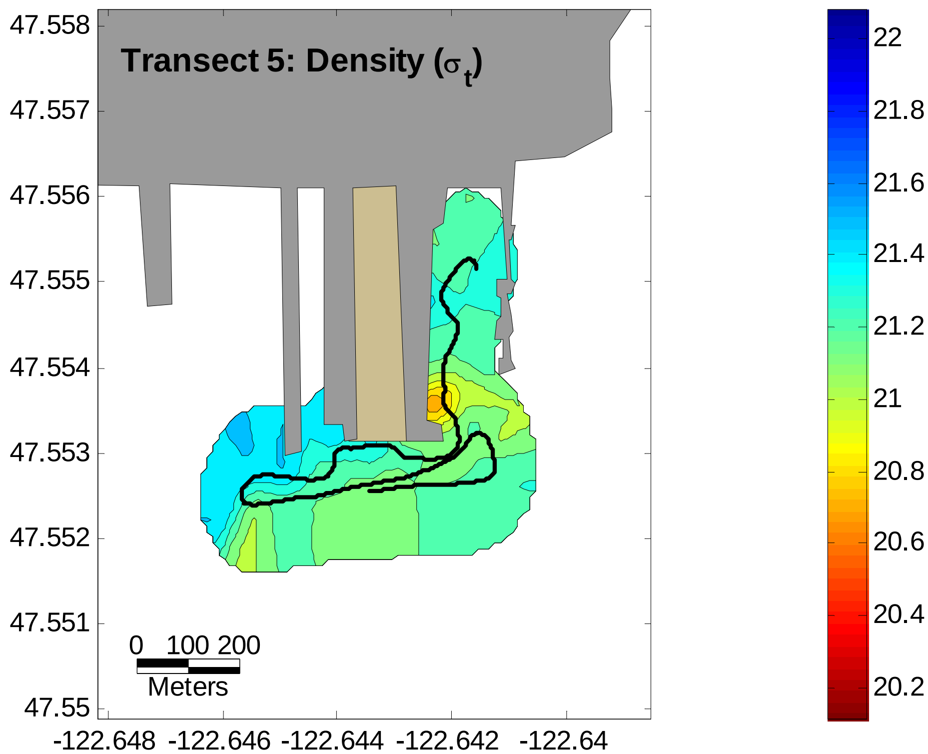
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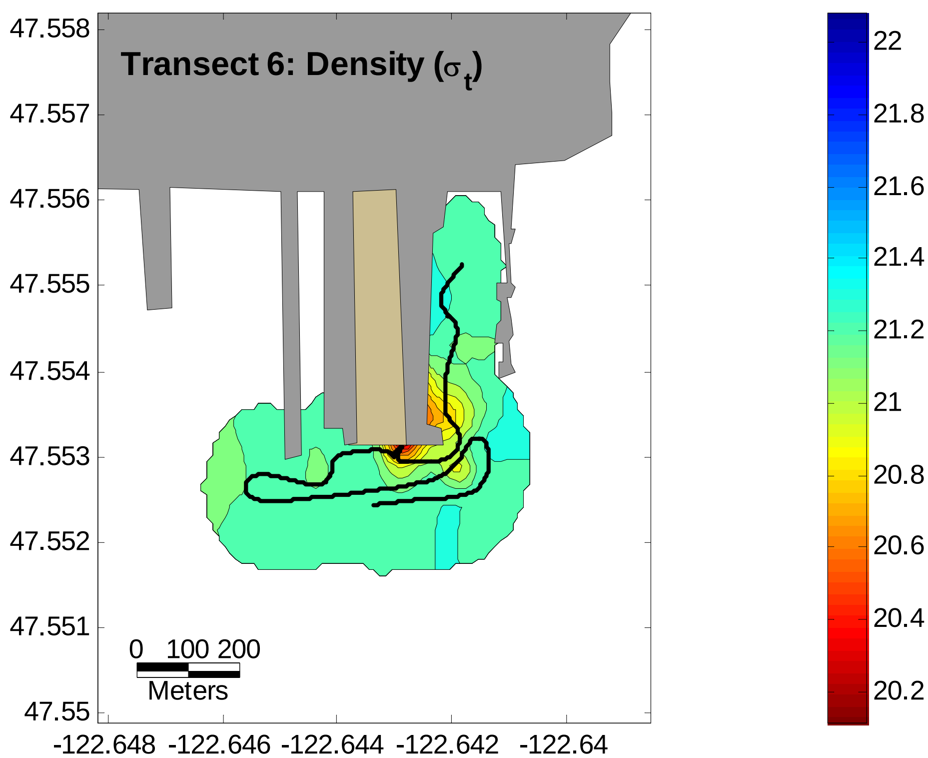
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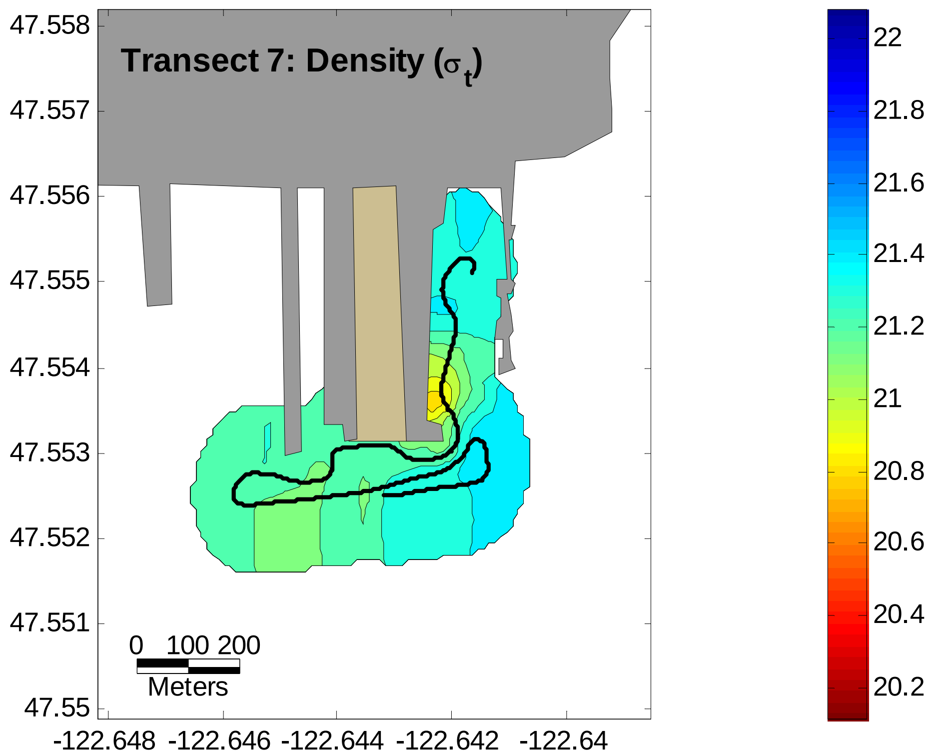
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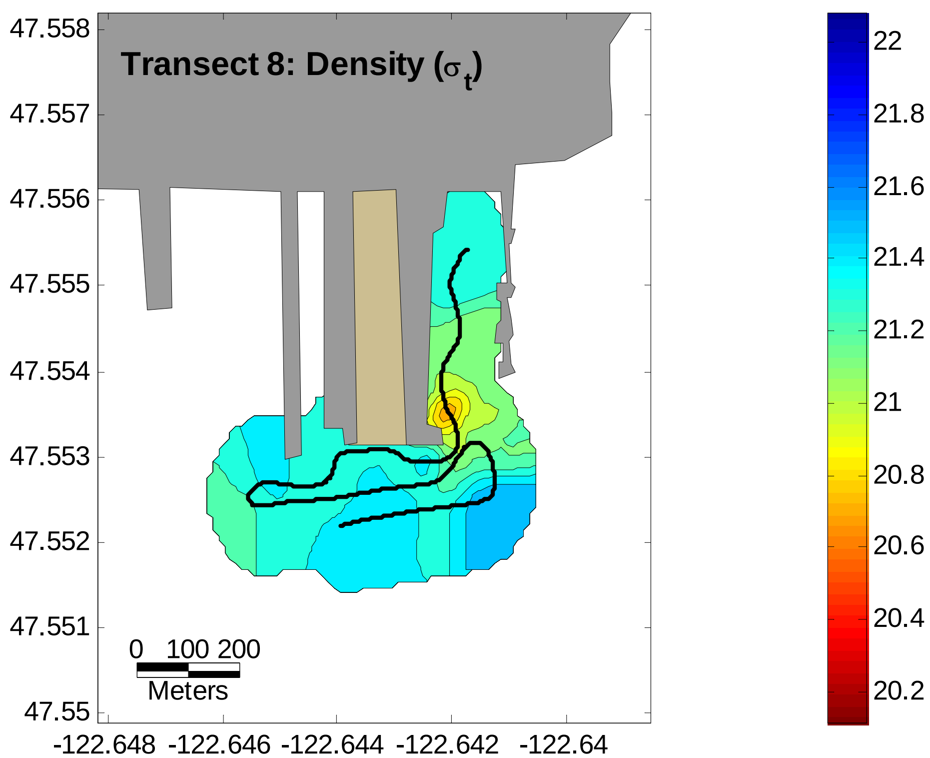
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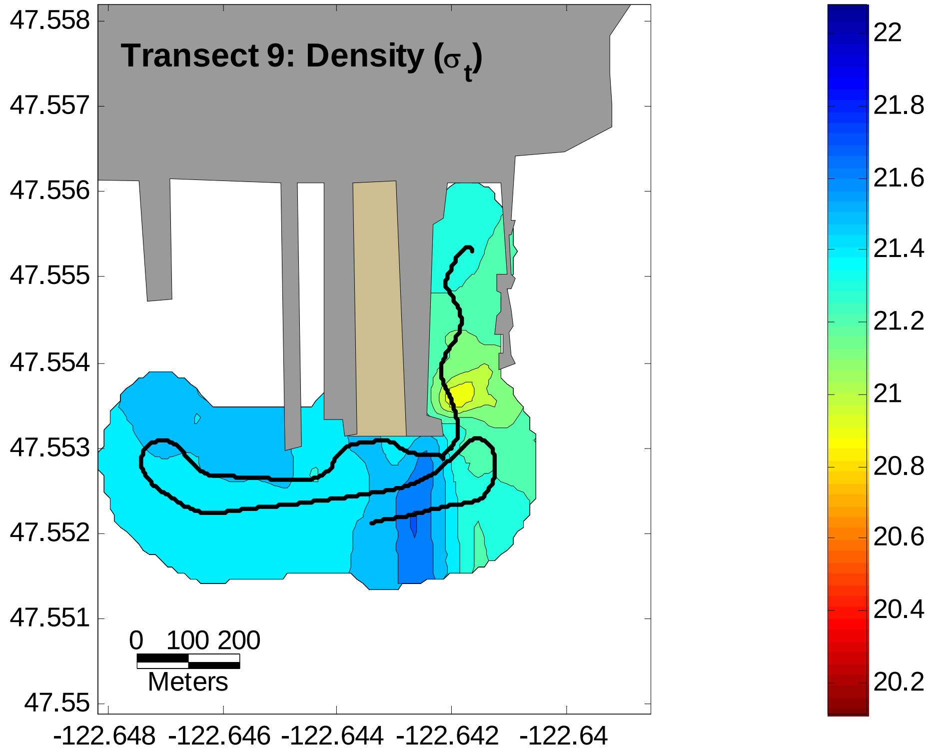
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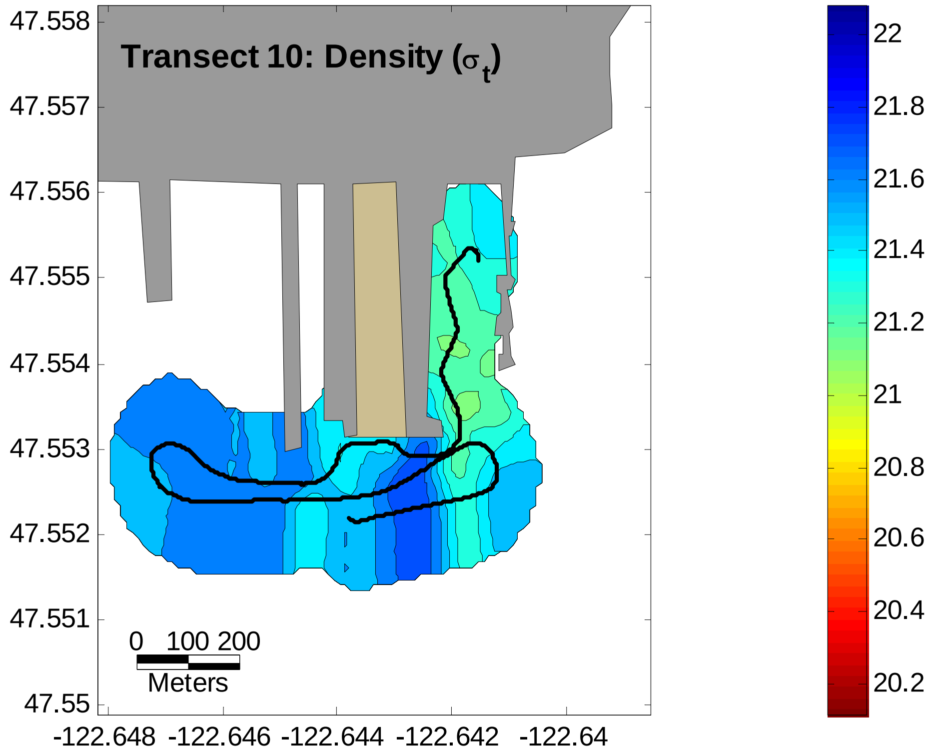
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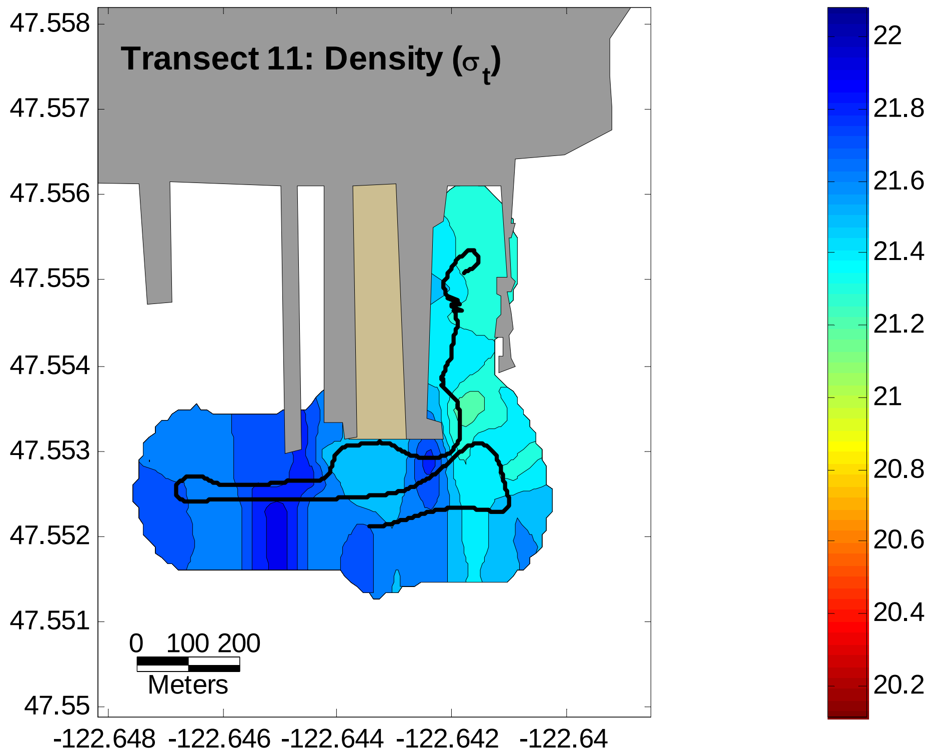
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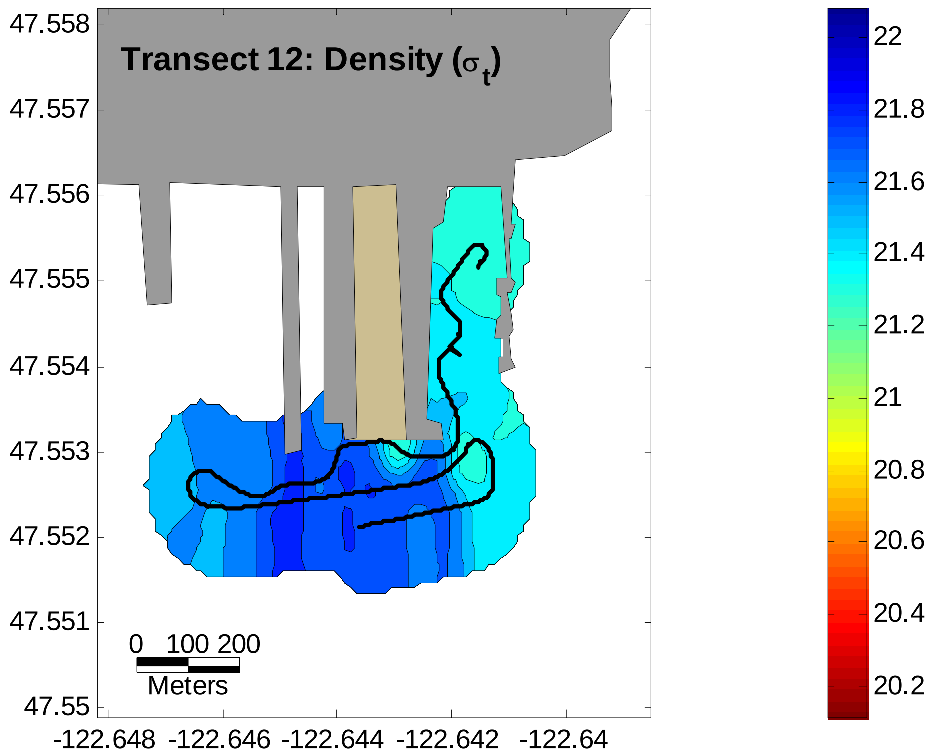
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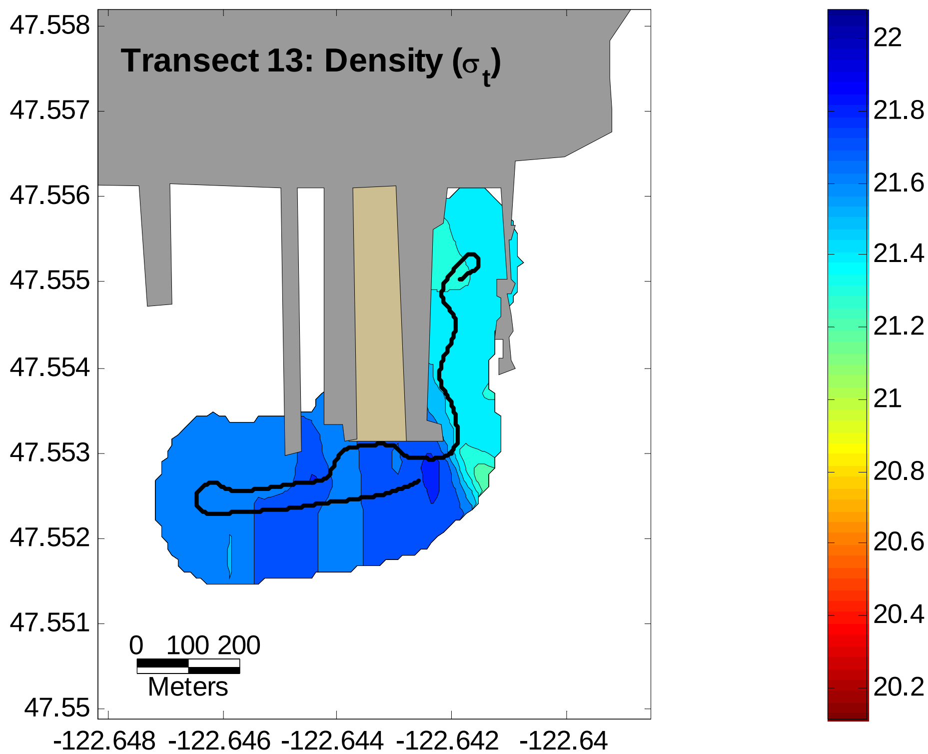
Transect 13: Density (σ_t)
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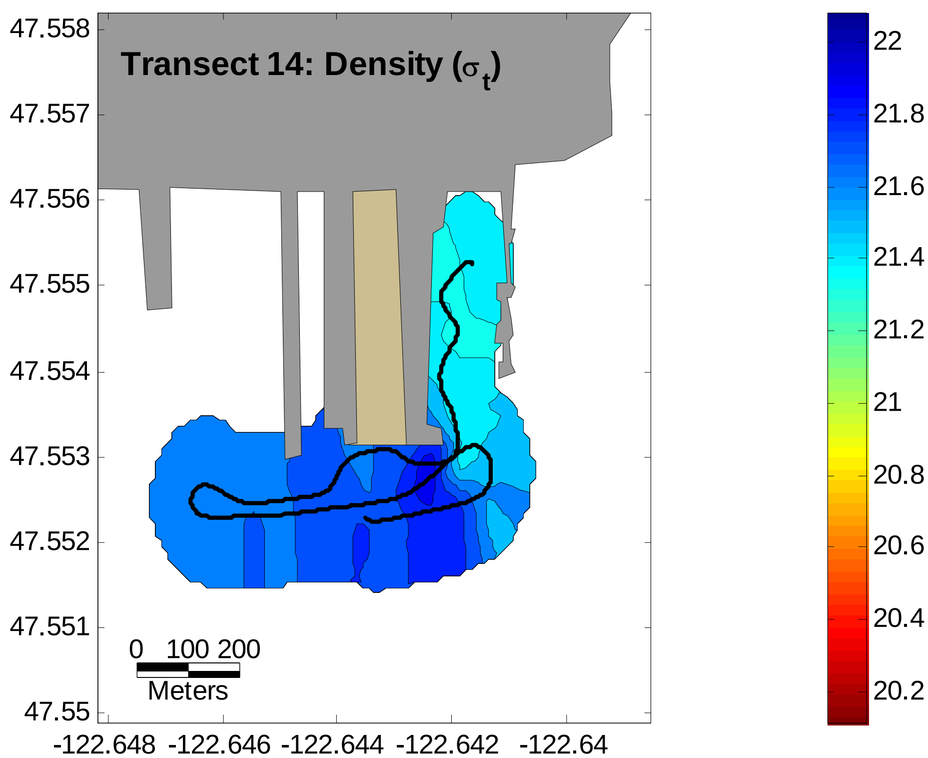
Transect 14: Density (σ_t)
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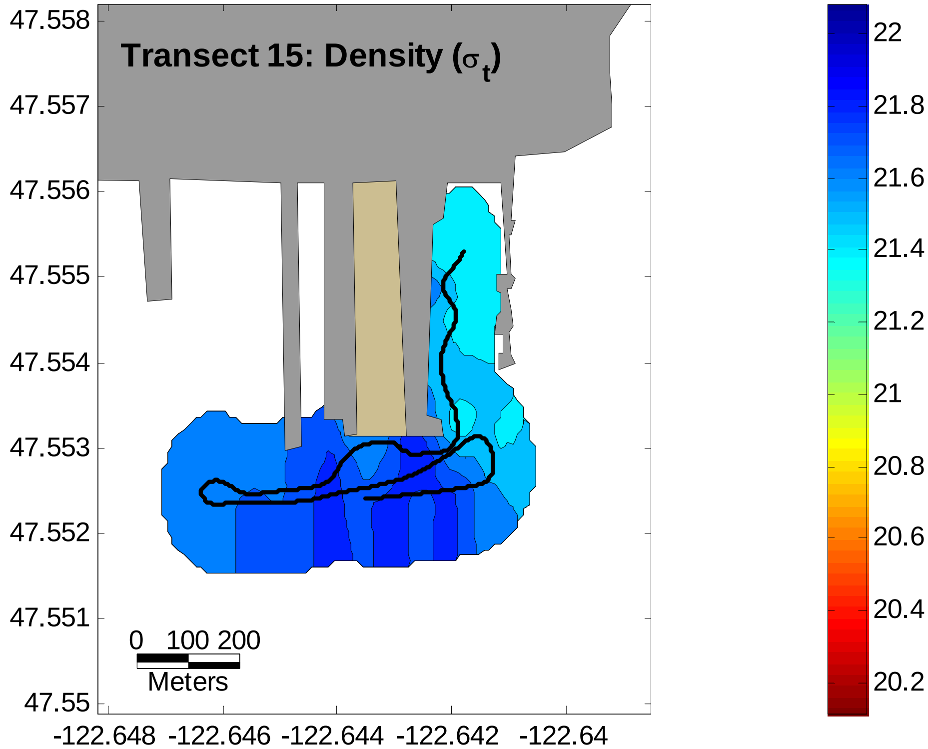

Transcect 15: Density (σ_t)
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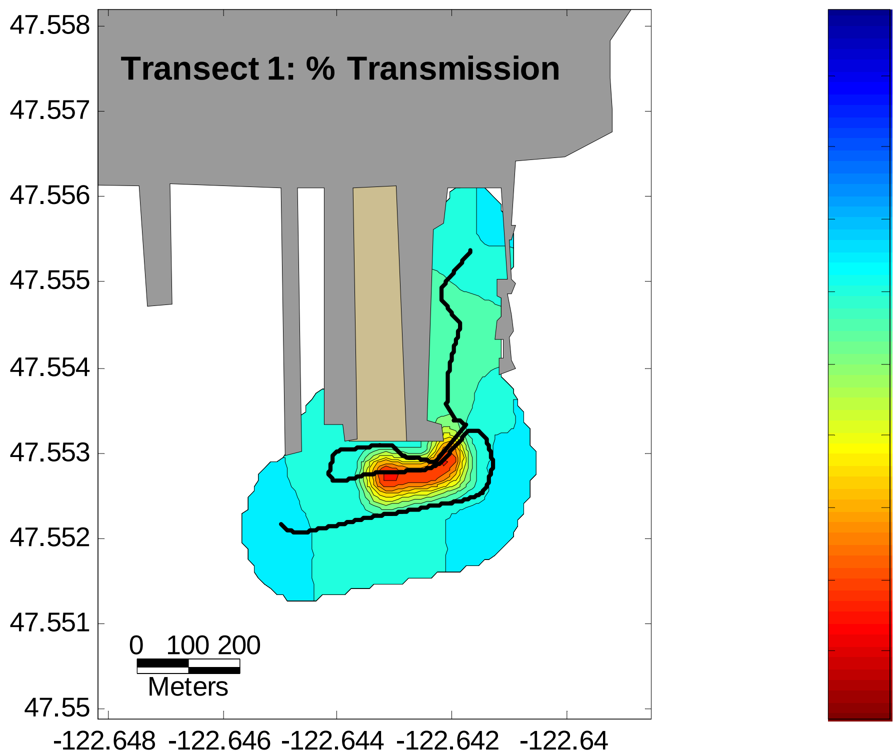
Transect 1: % Transmission
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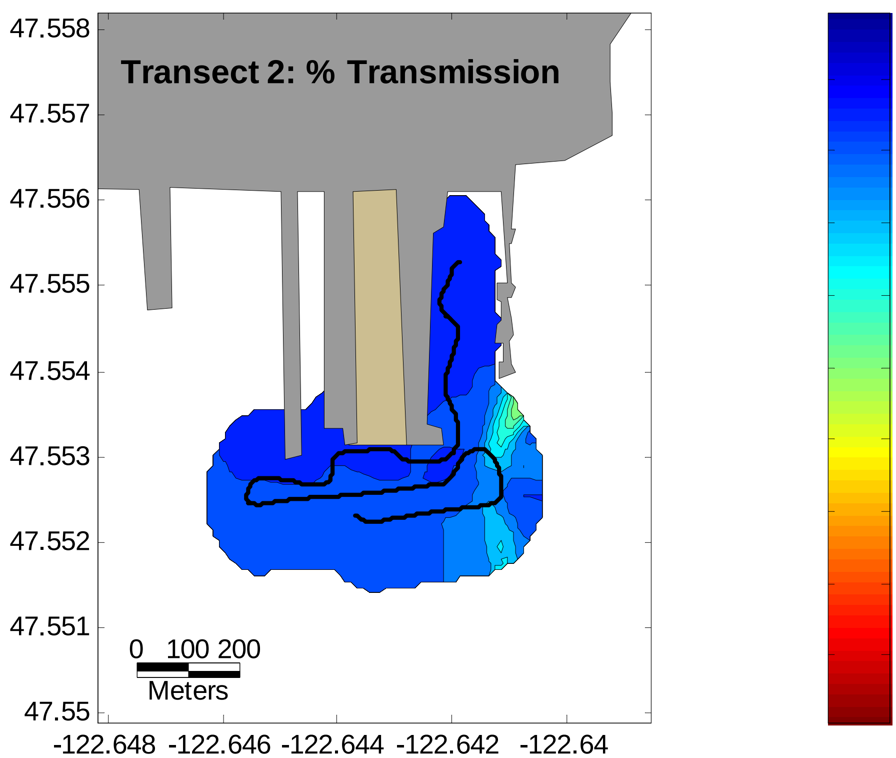
Transect 2: % Transmission
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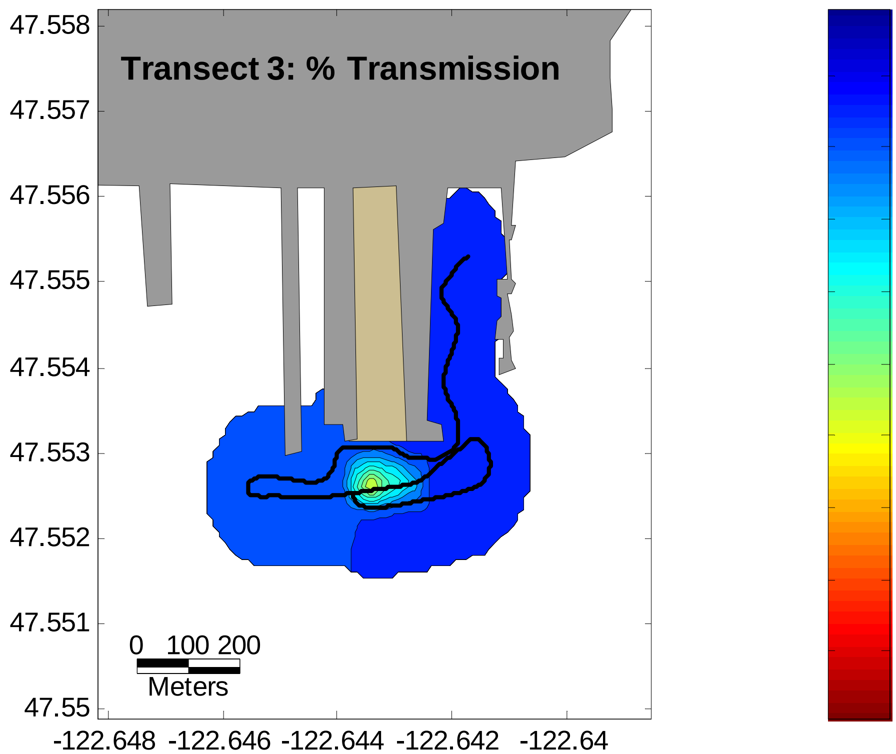
Transect 3: % Transmission
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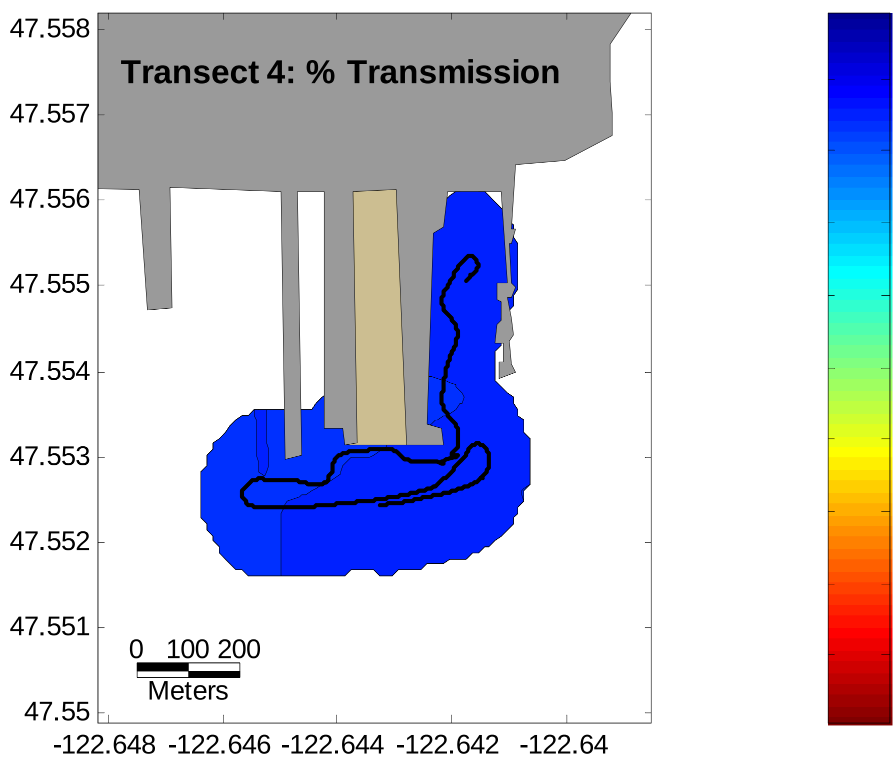
Transect 4: % Transmission
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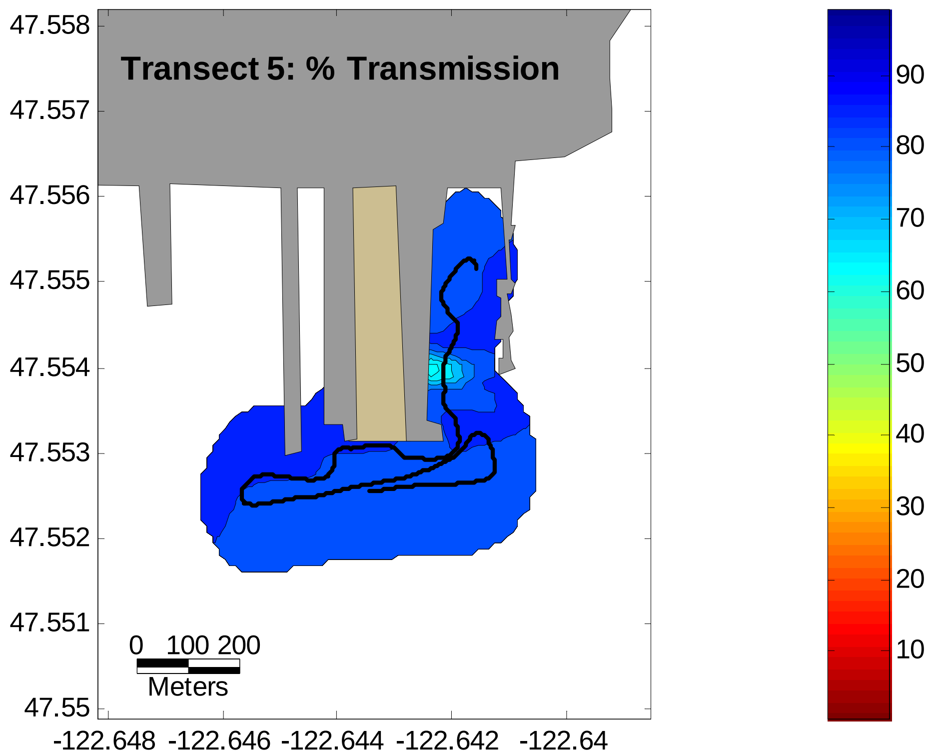
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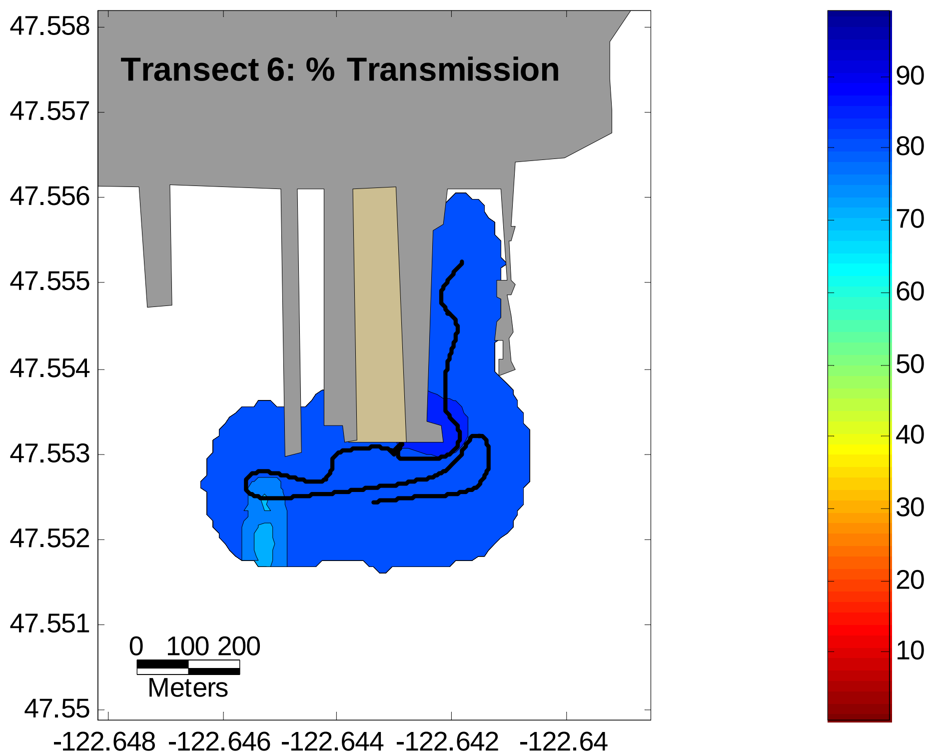
Transect 6: % Transmission
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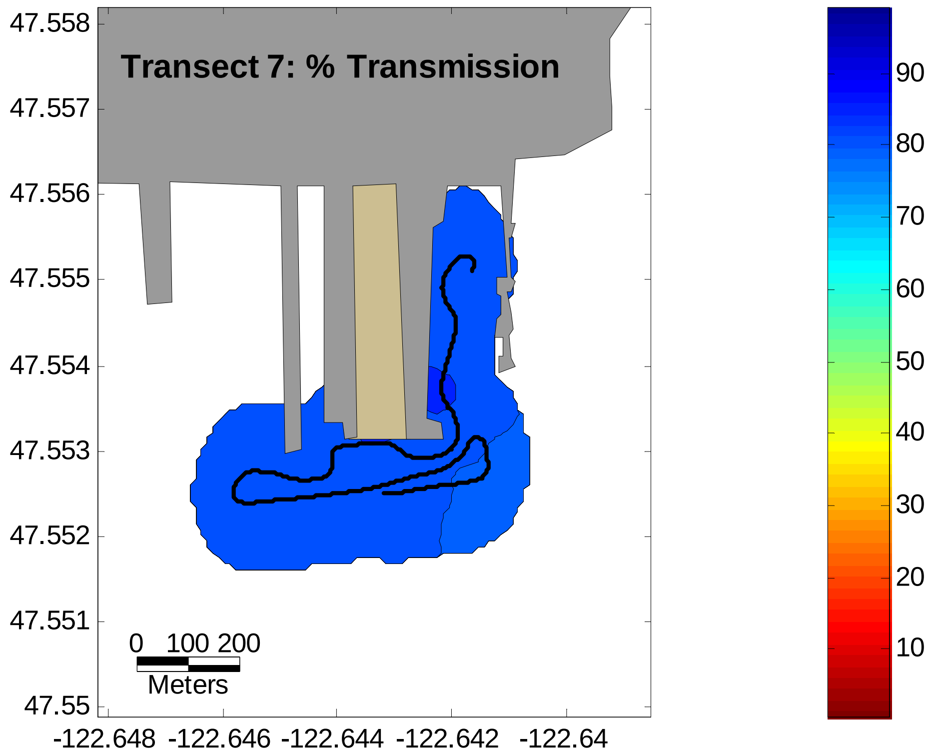
Transect 7: % Transmission
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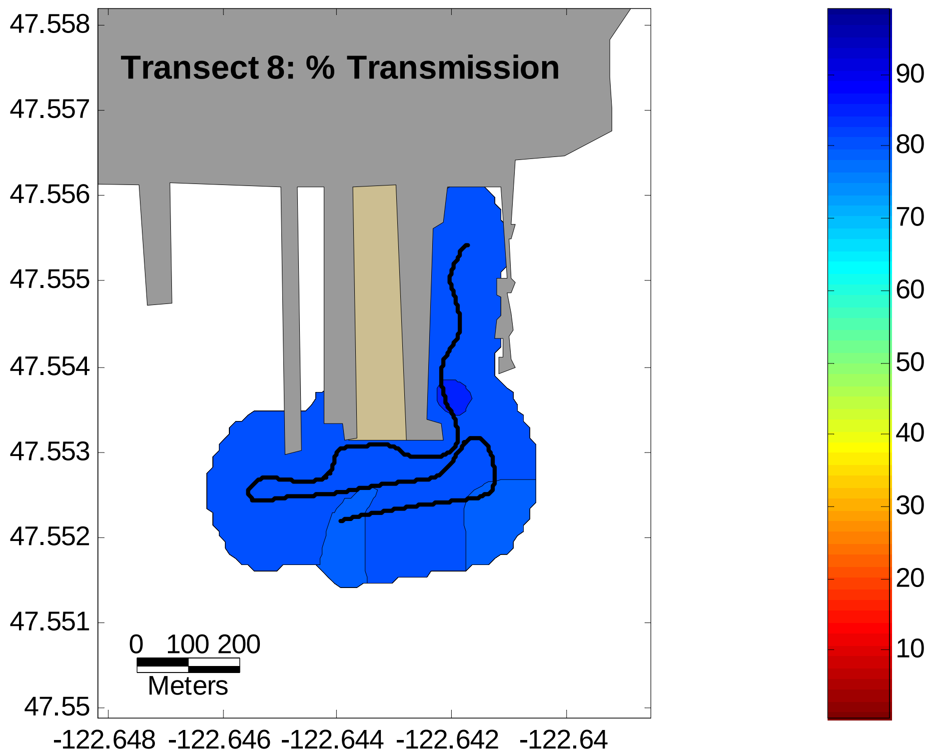
Transect 8: % Transmission
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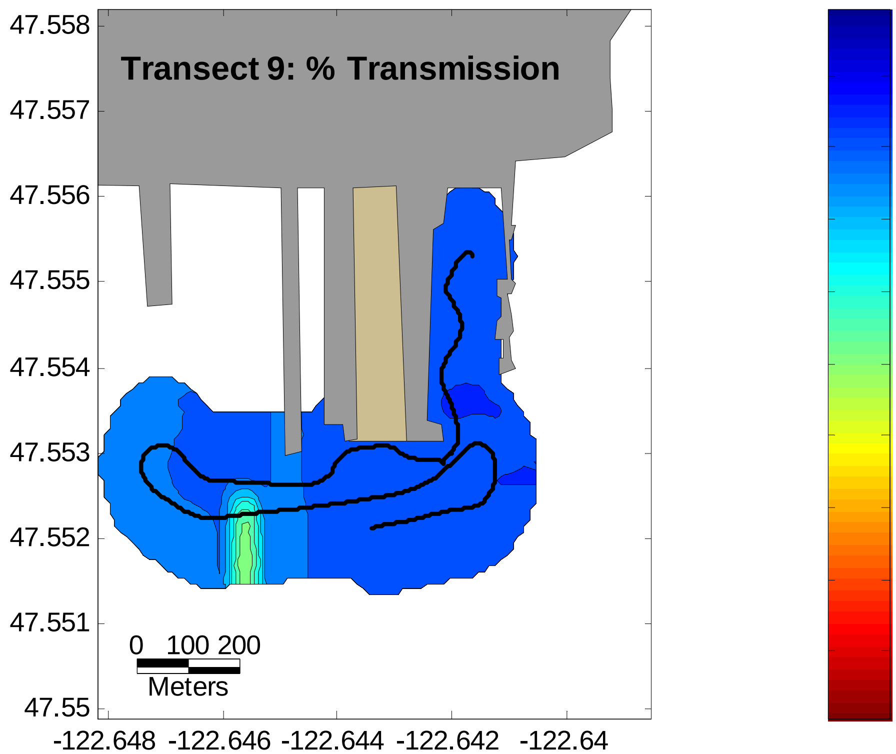
Transect 9: % Transmission
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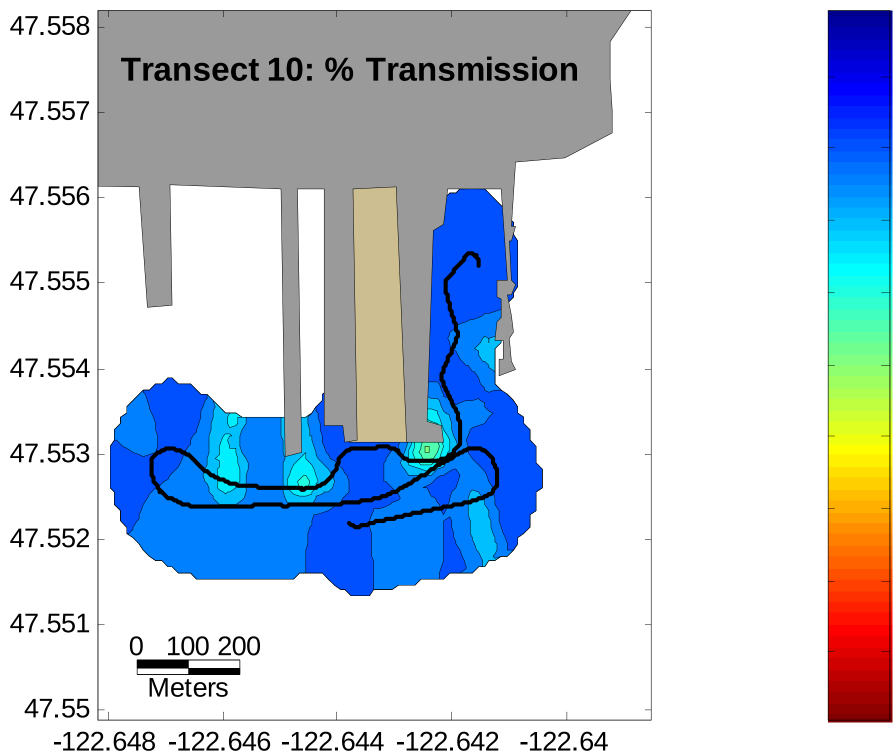
Transect 10: % Transmission
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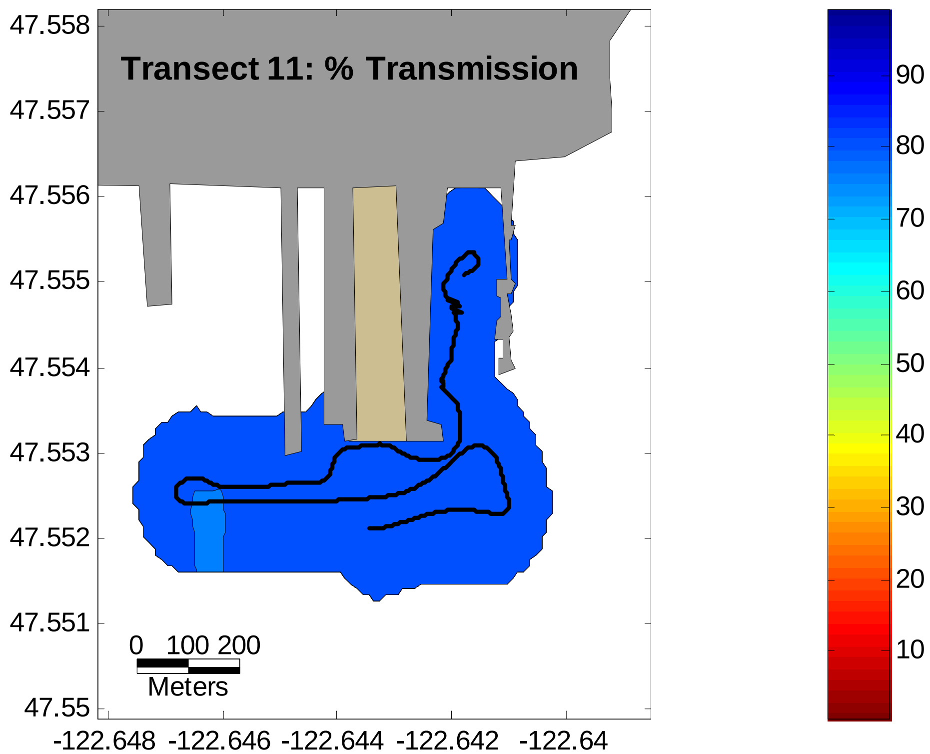
Transect 11: % Transmission
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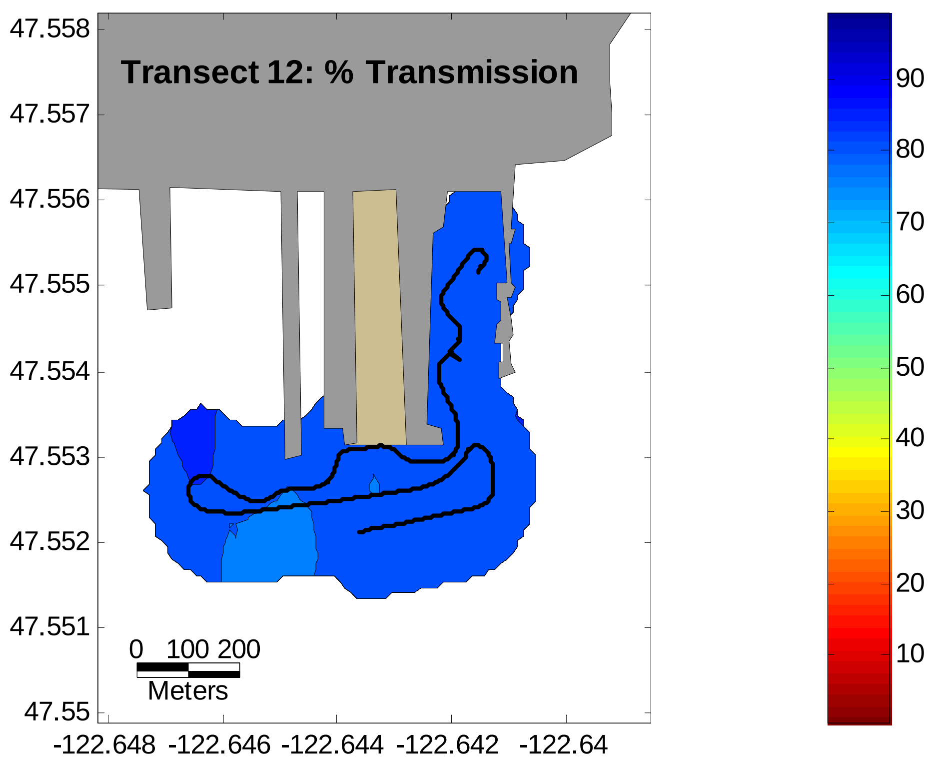
Transect 12: % Transmission
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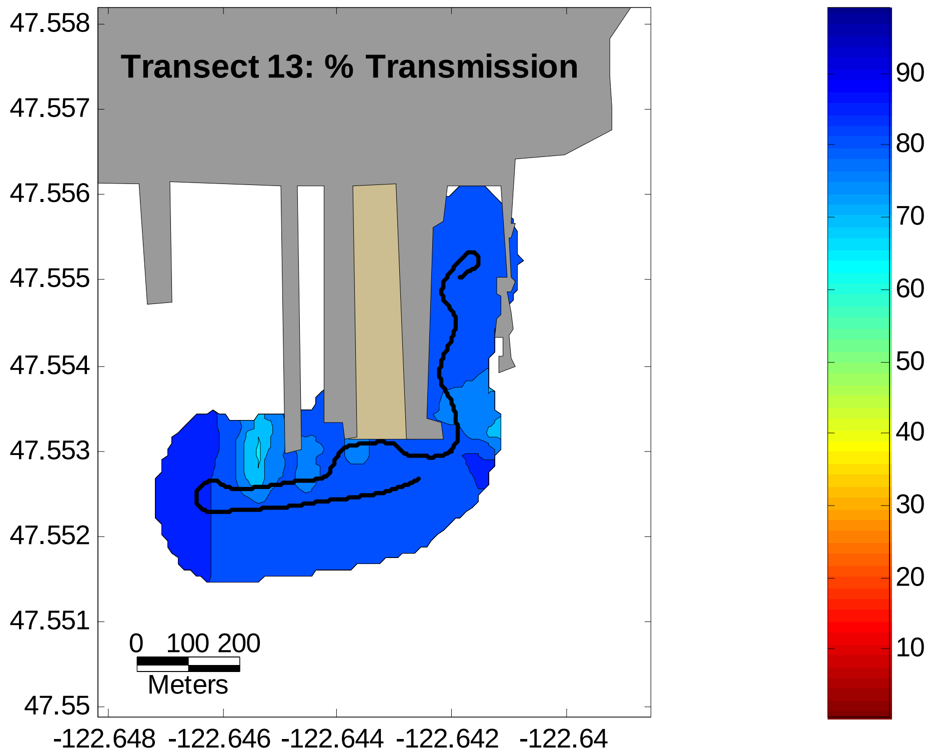
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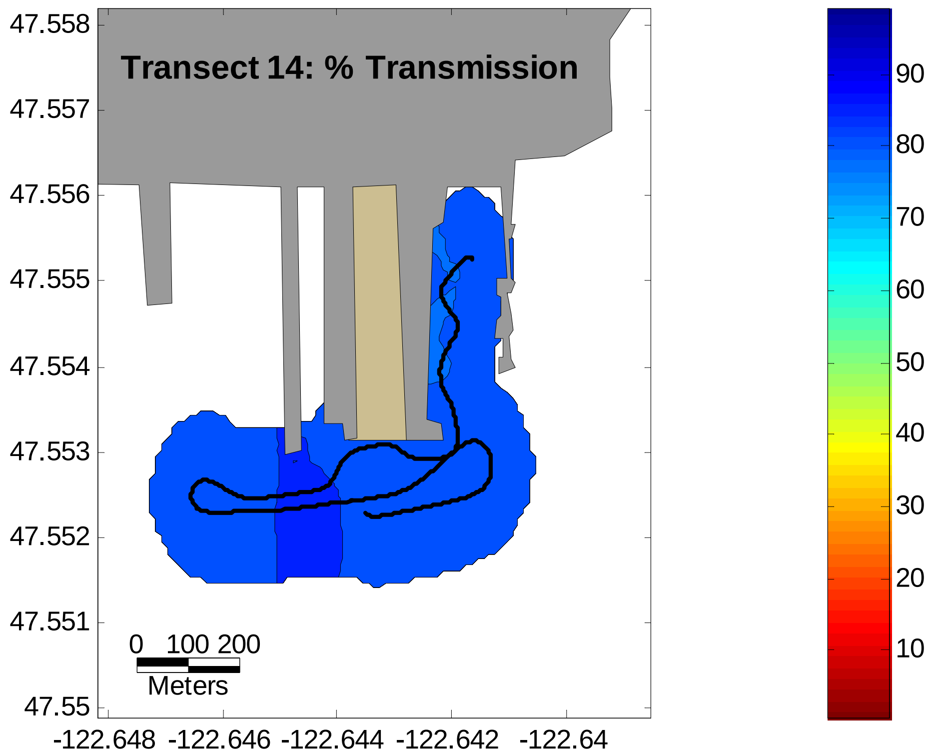
Transect 14: % Transmission
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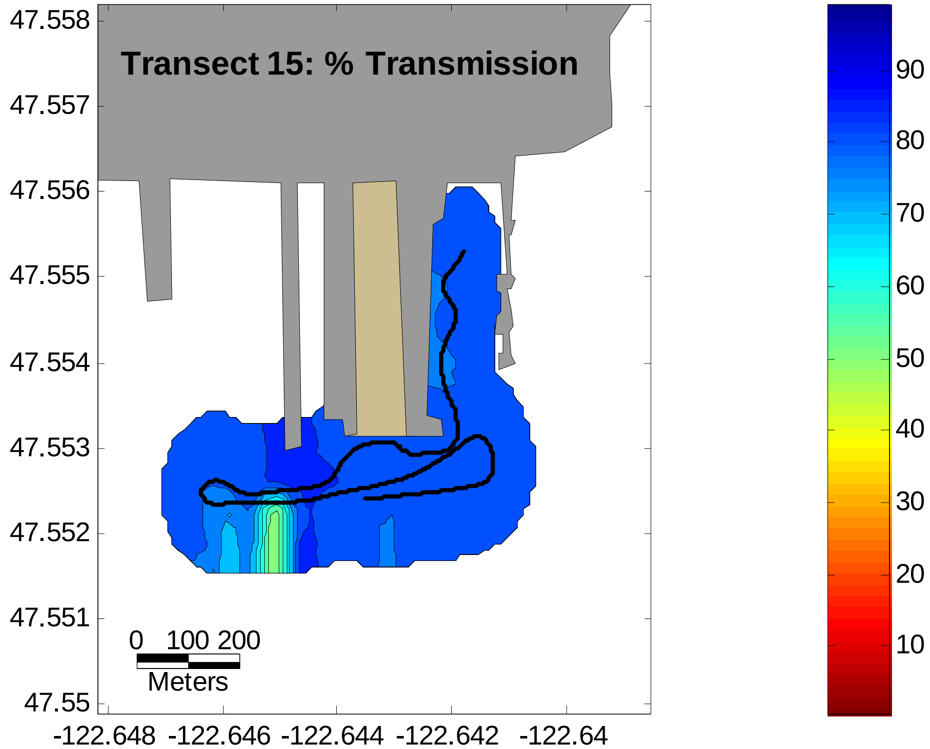

Transcect 15: % Transmission
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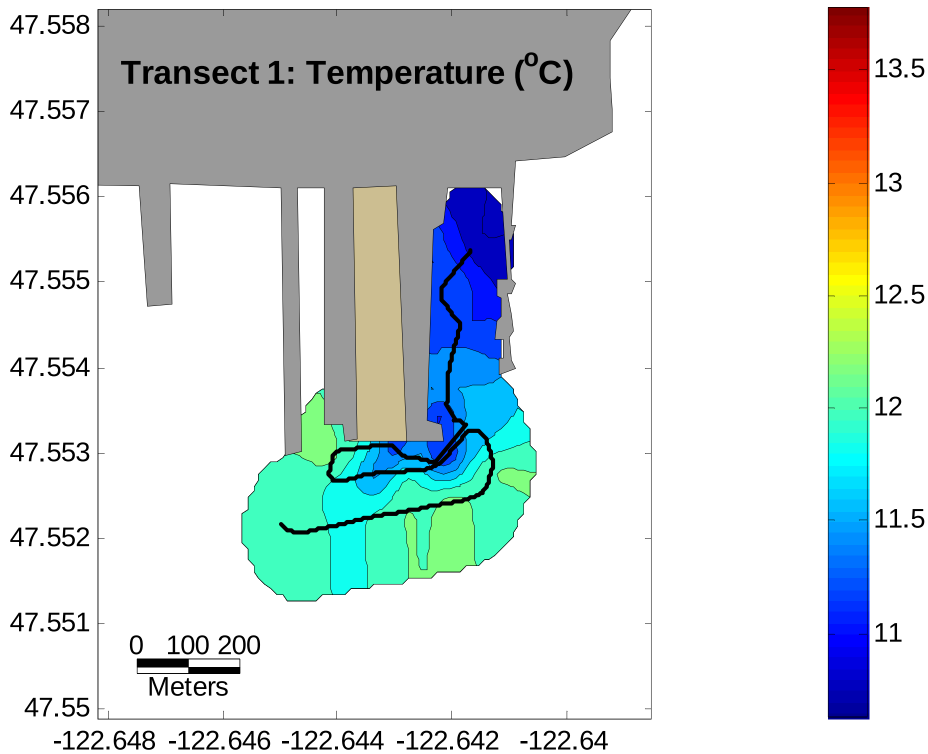
Transect 1: Temperature (°C)
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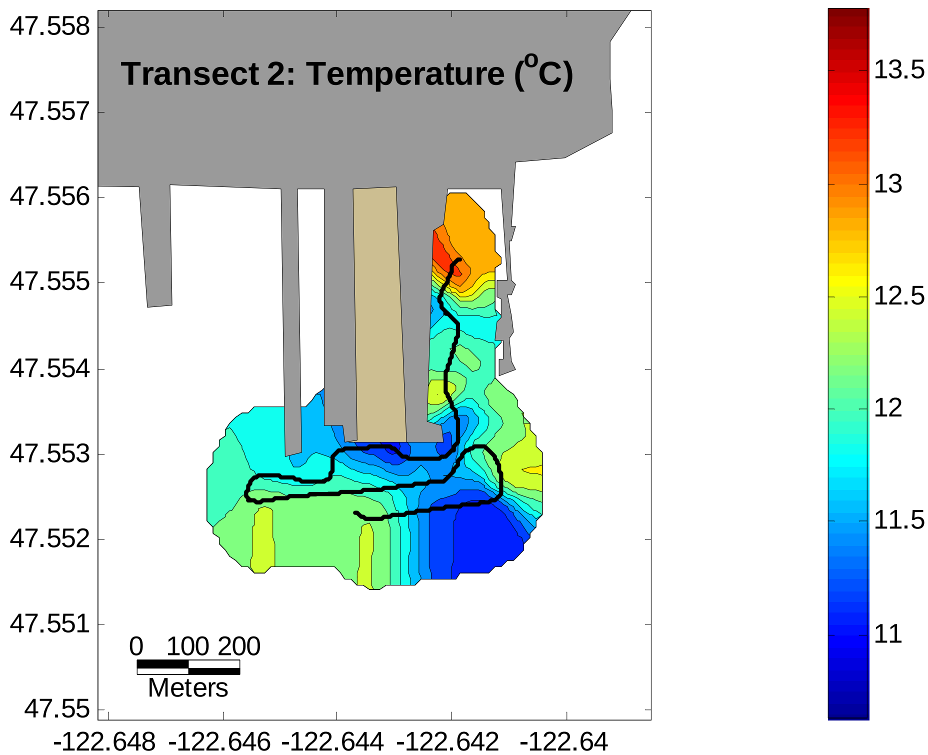
Transect 2: Temperature (°C)
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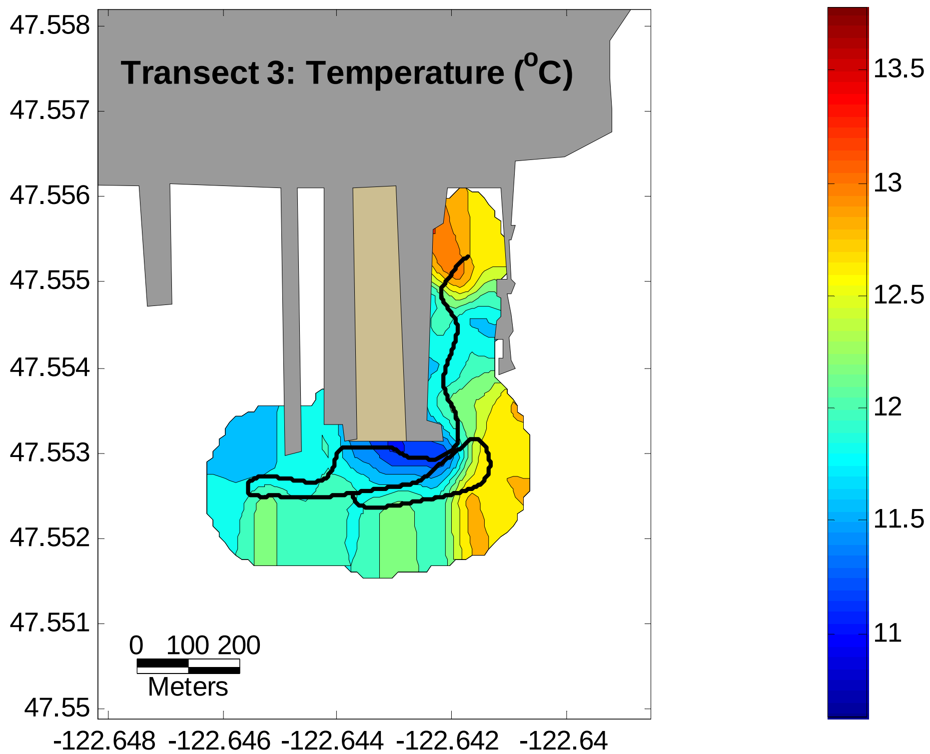
Transect 3: Temperature (^{o}C)
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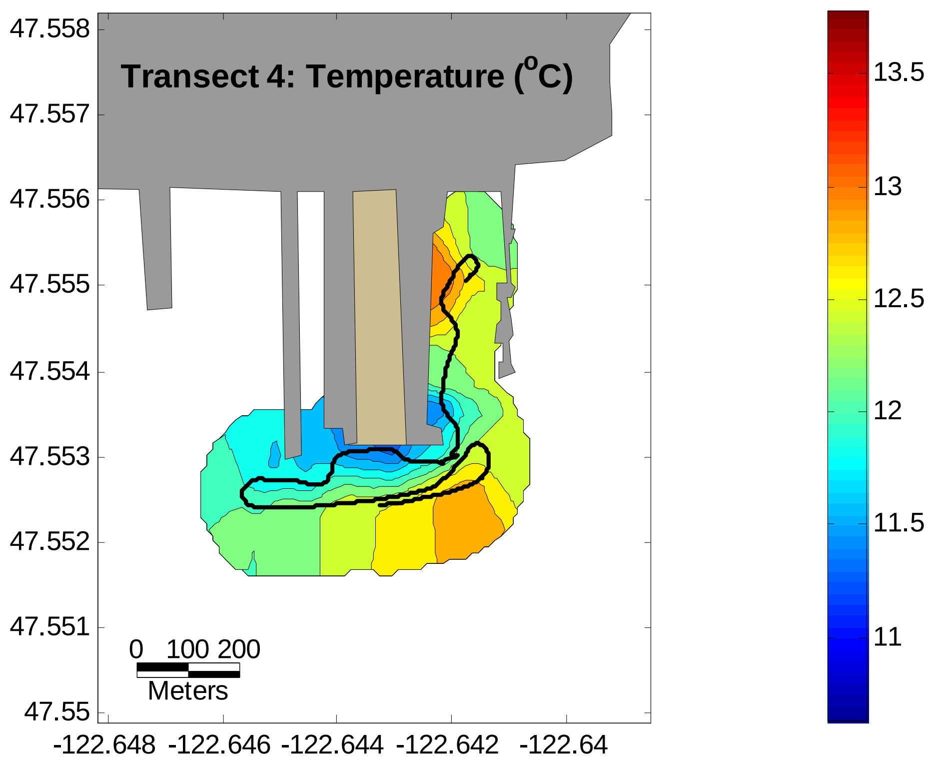
Transect 4: Temperature (^{o}C)
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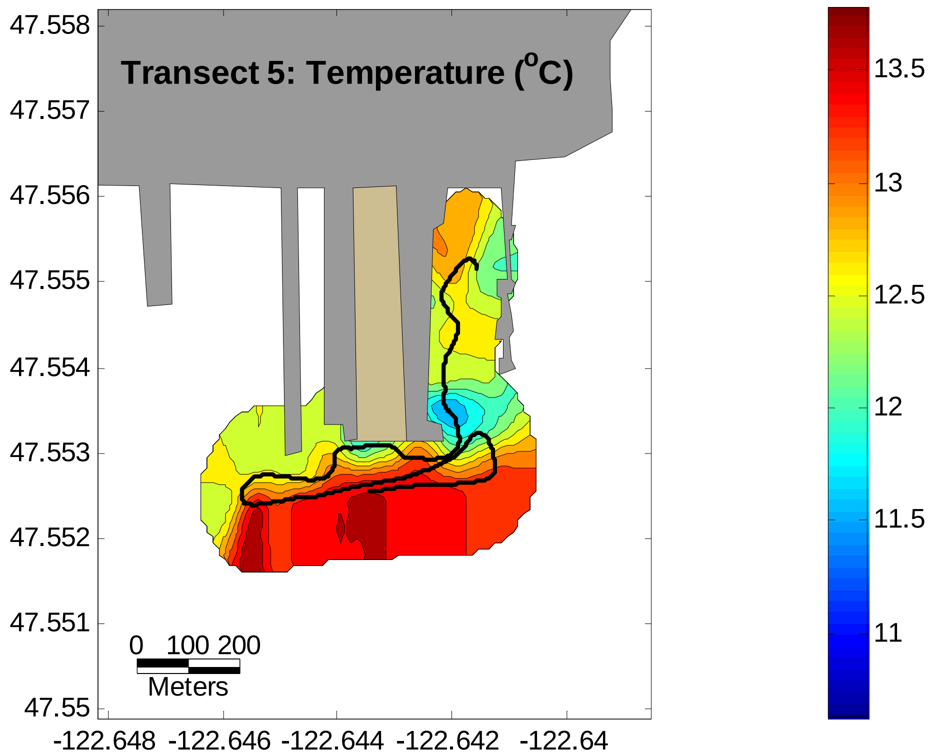
Transect 5: Temperature (°C)
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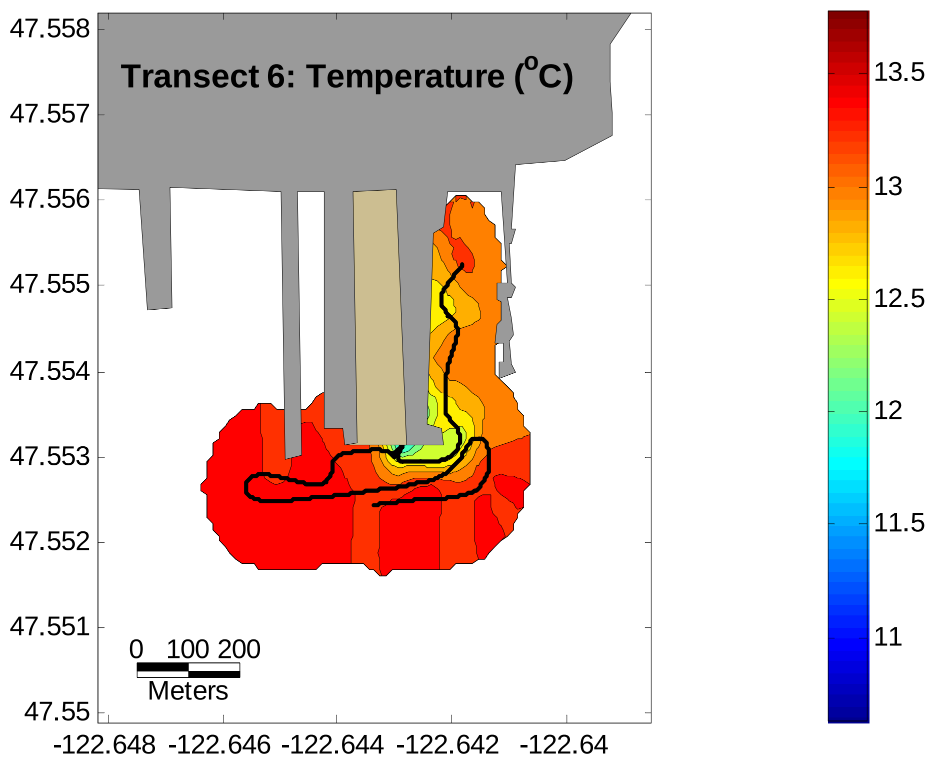
Transect 6: Temperature (°C)
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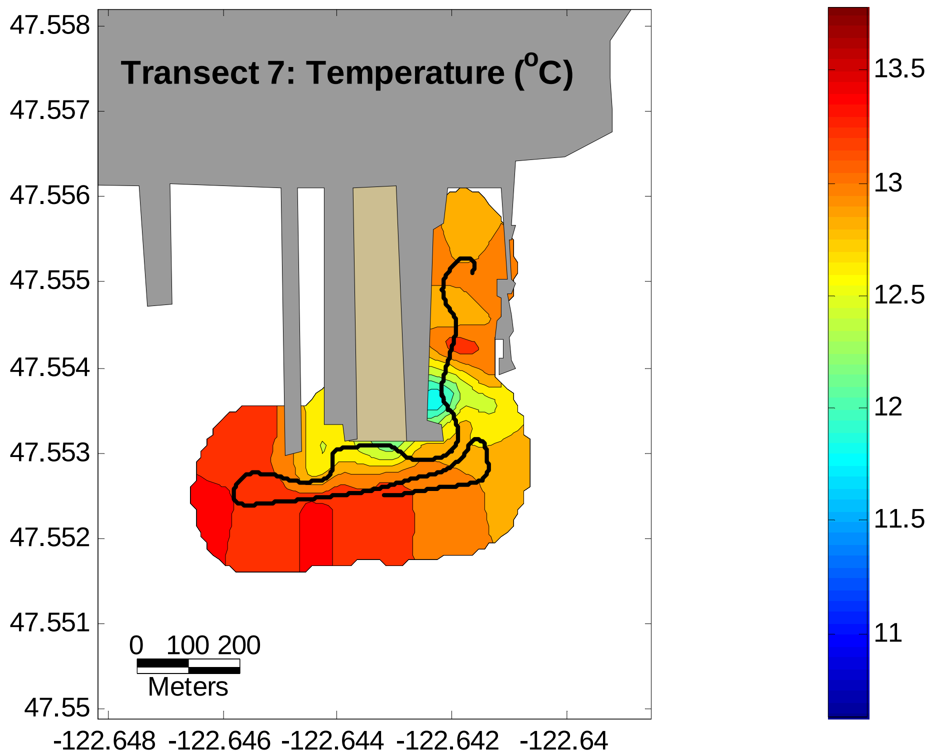
Transcect 7: Temperature (°C)
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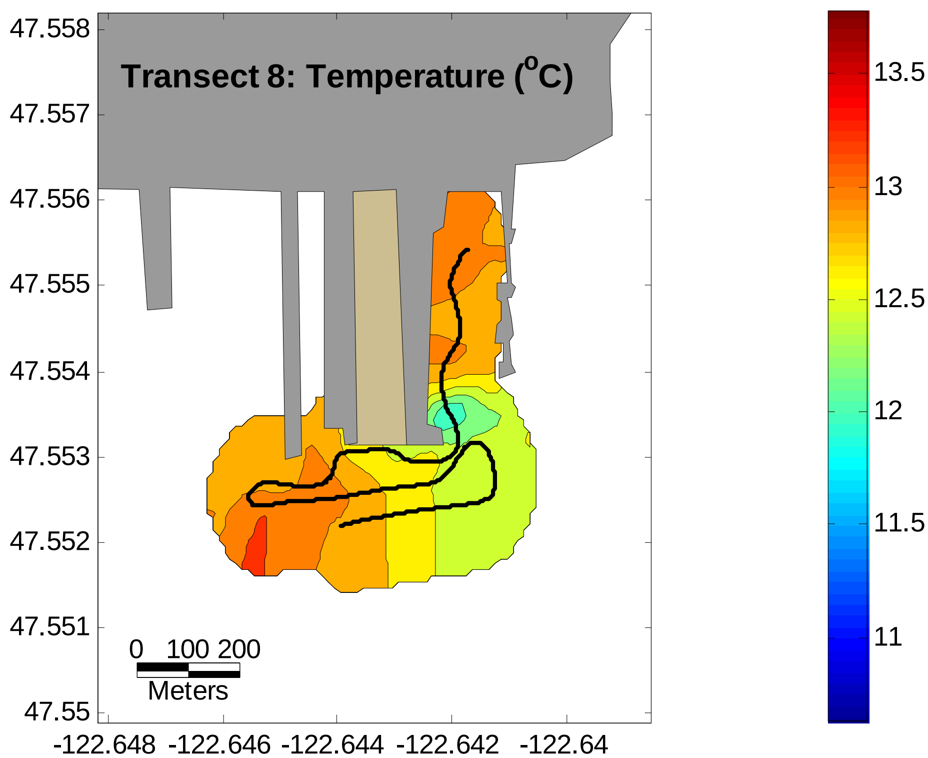
Transect 8: Temperature (°C)
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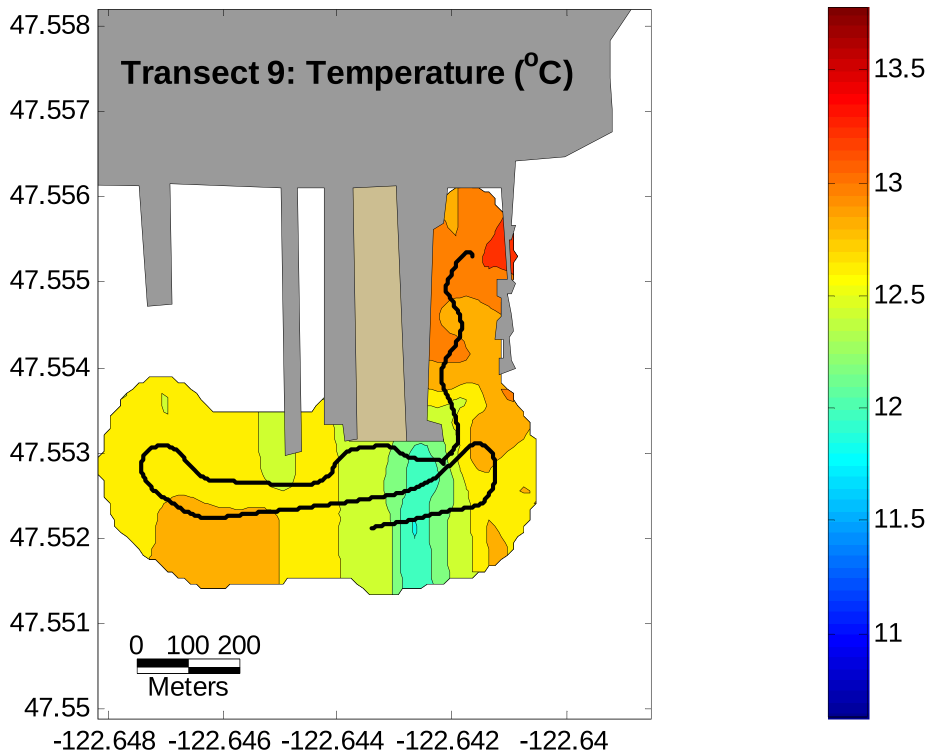

Transect 9: Temperature (^{o}C)
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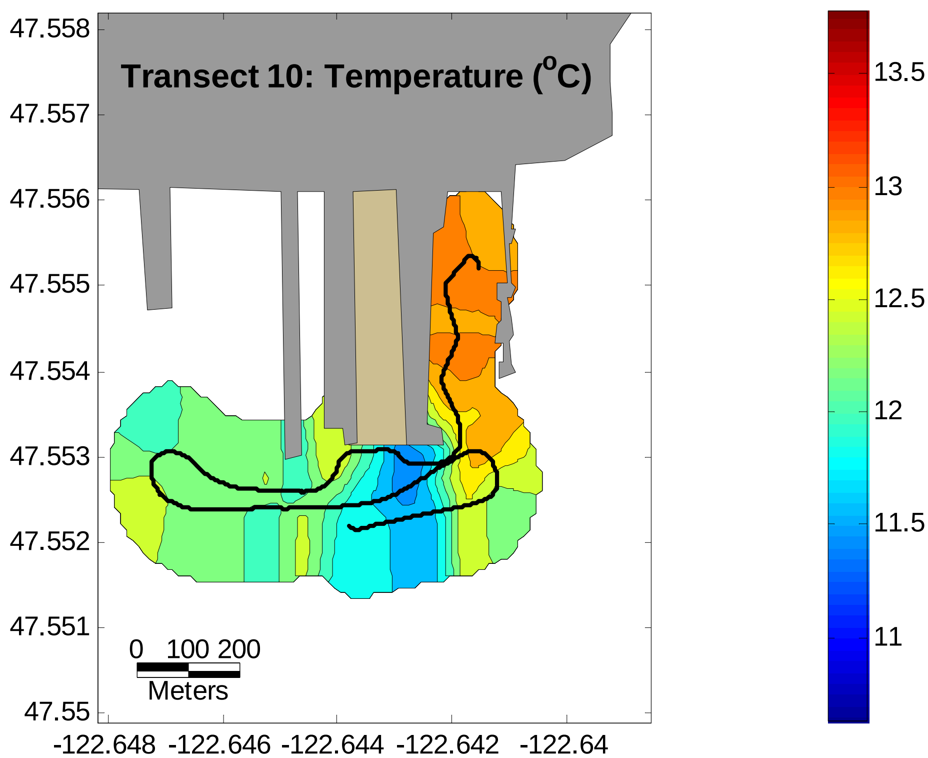

Transect 10: Temperature (^{o}C)
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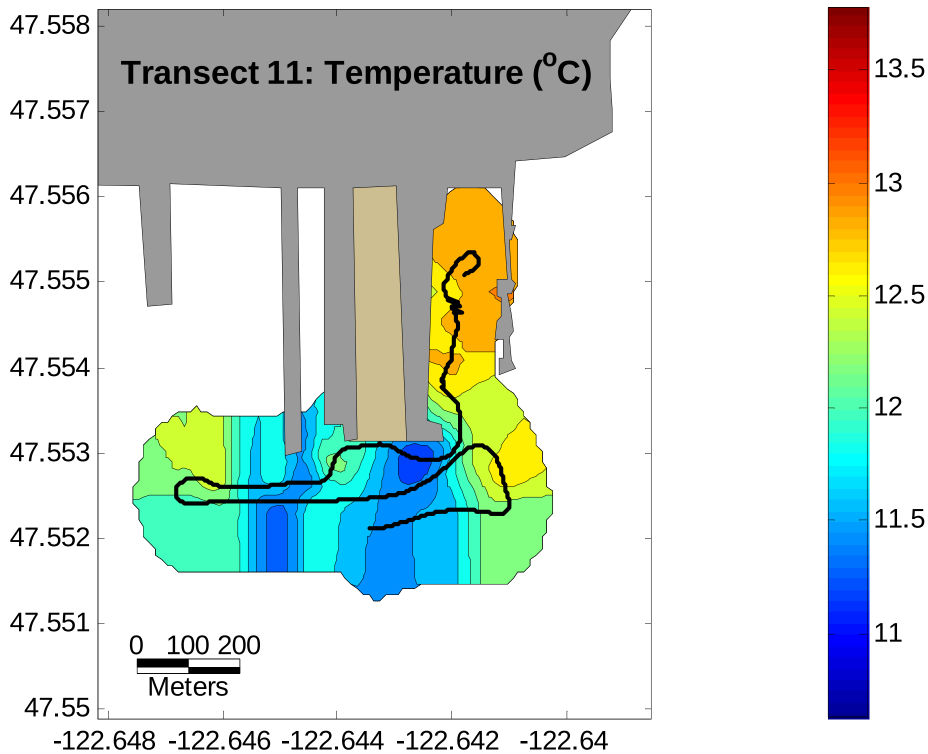
Transect 11: Temperature (^oC)
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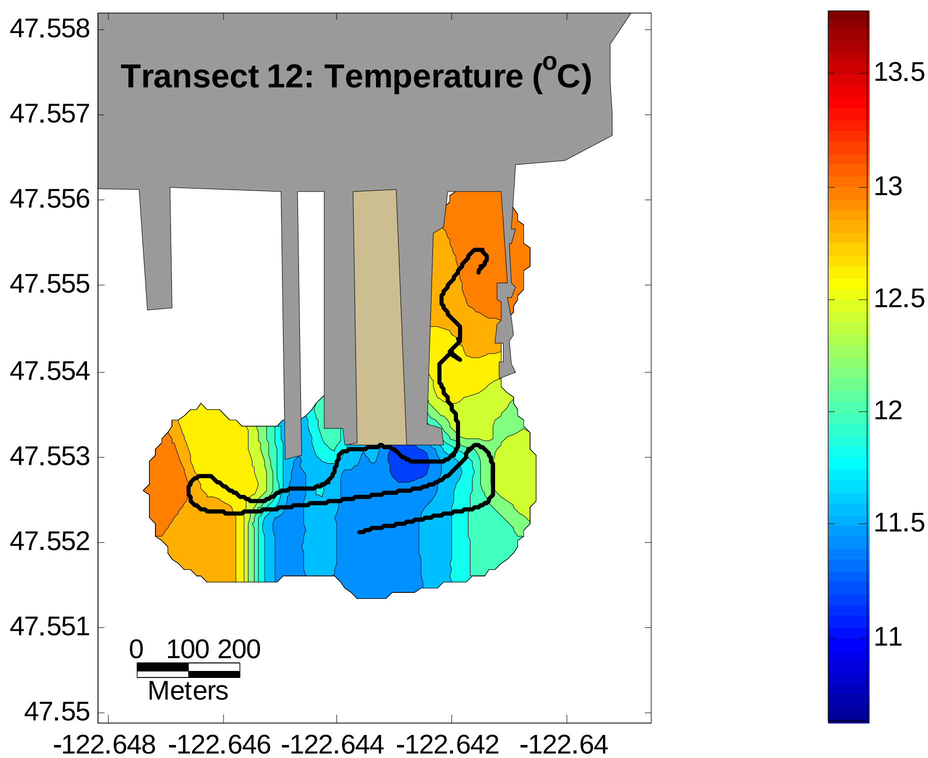
Transect 12: Temperature (^oC)
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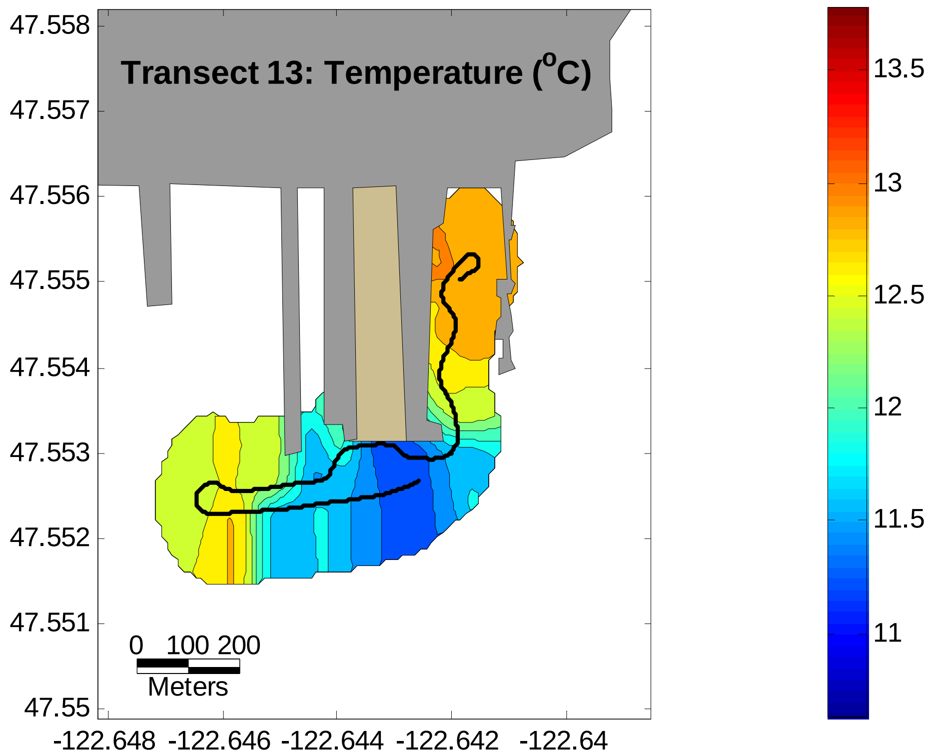
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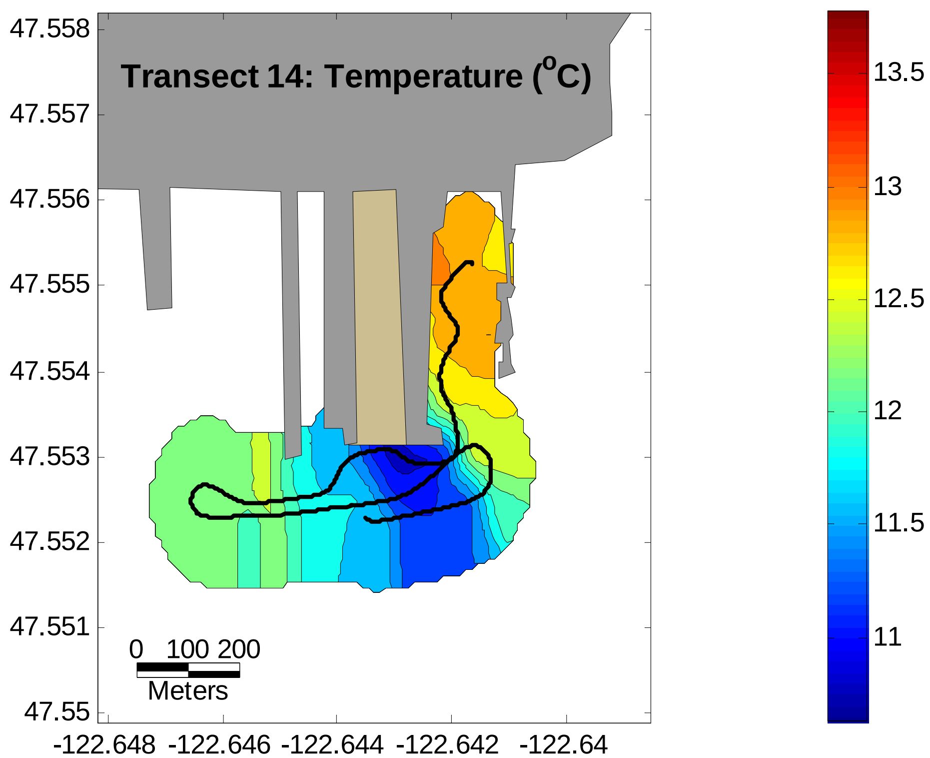
Transect 14: Temperature (°C)
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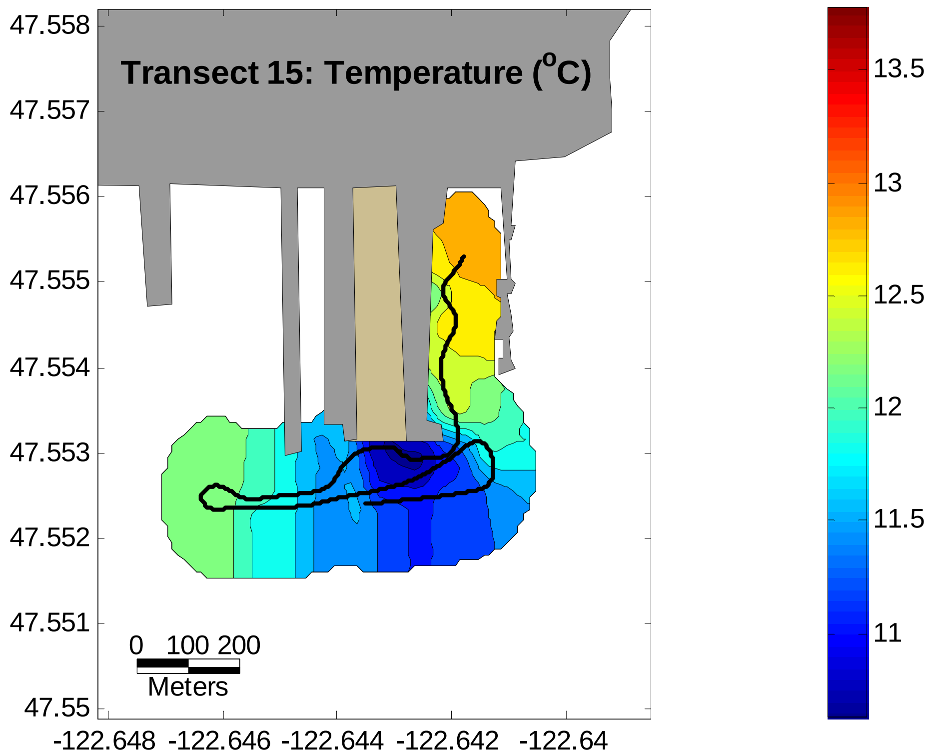

Transect 15: Temperature (^oC)
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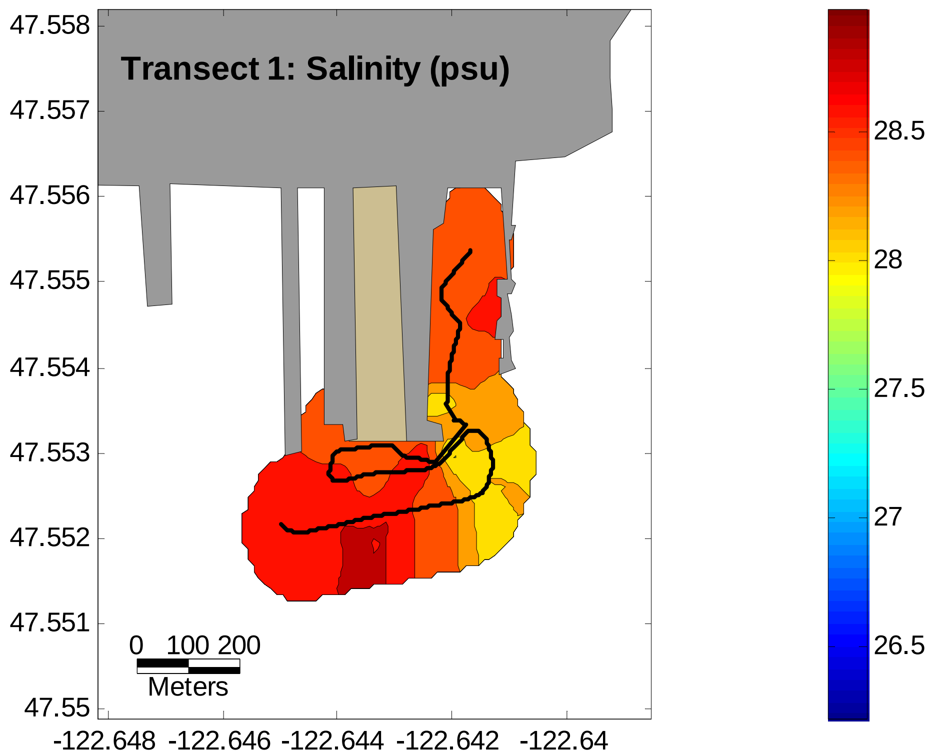
Transect 1: Salinity (psu)
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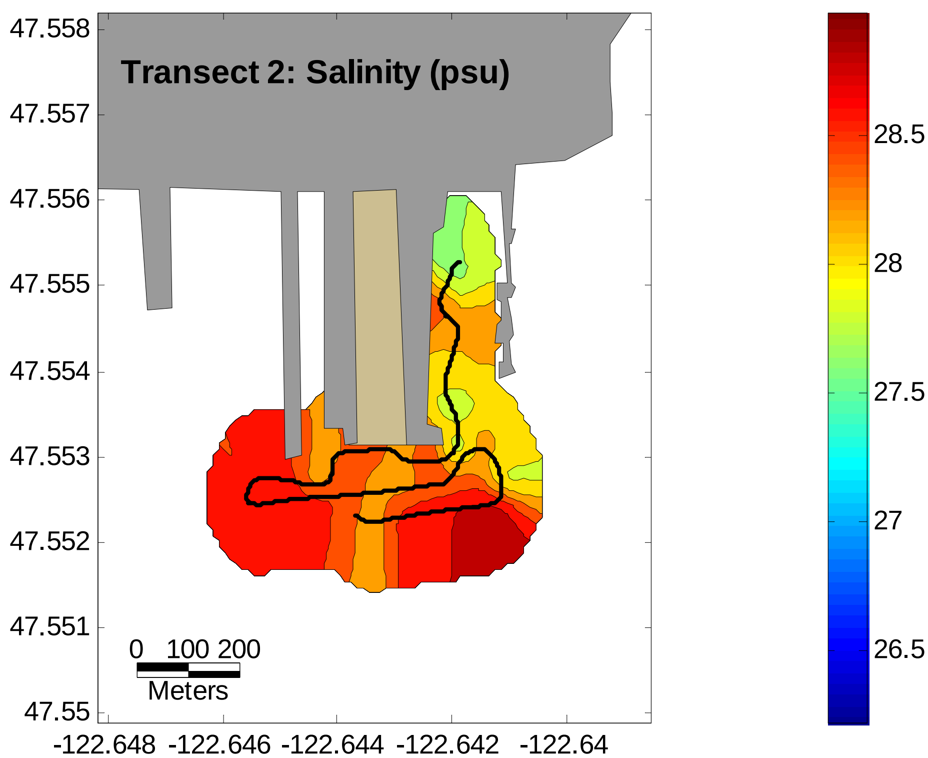
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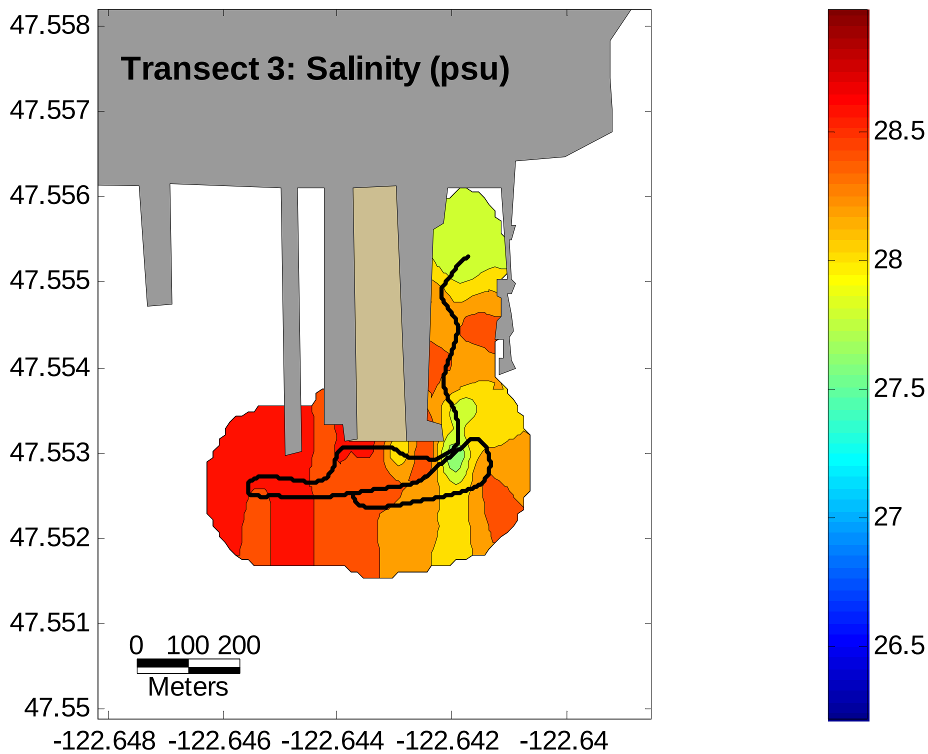
Transect 3: Salinity (psu)
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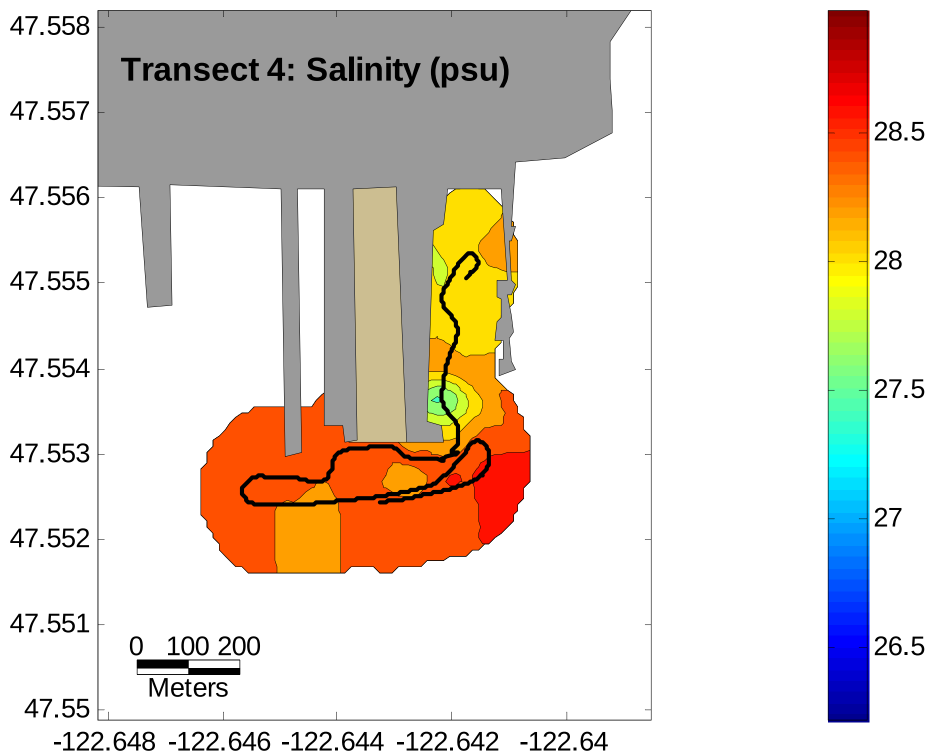
Transect 4: Salinity (psu)
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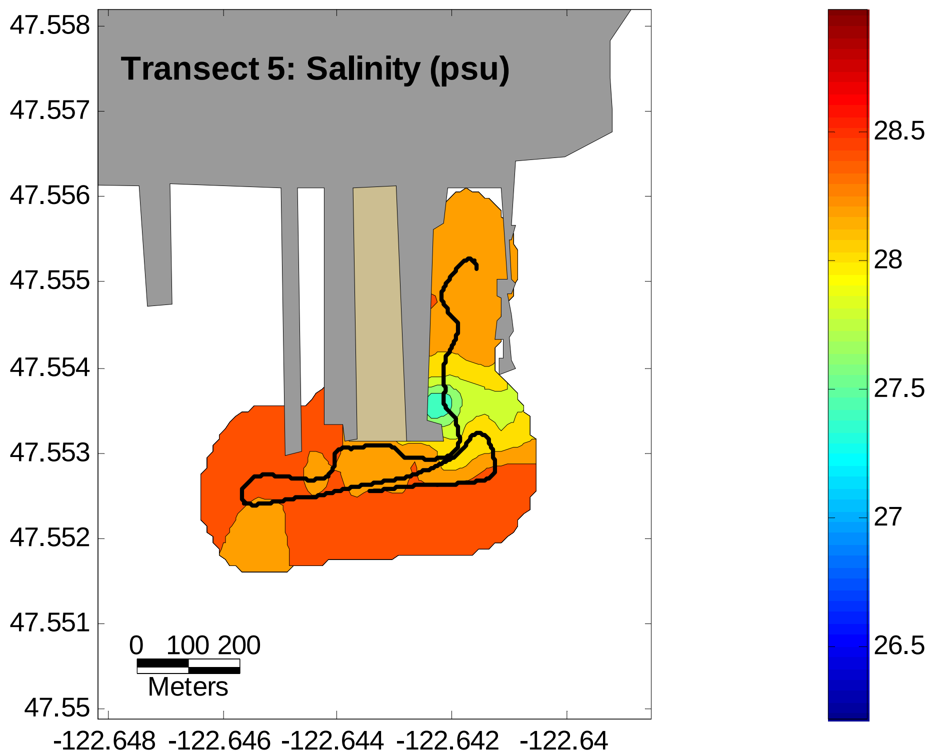
Transect 5: Salinity (psu)
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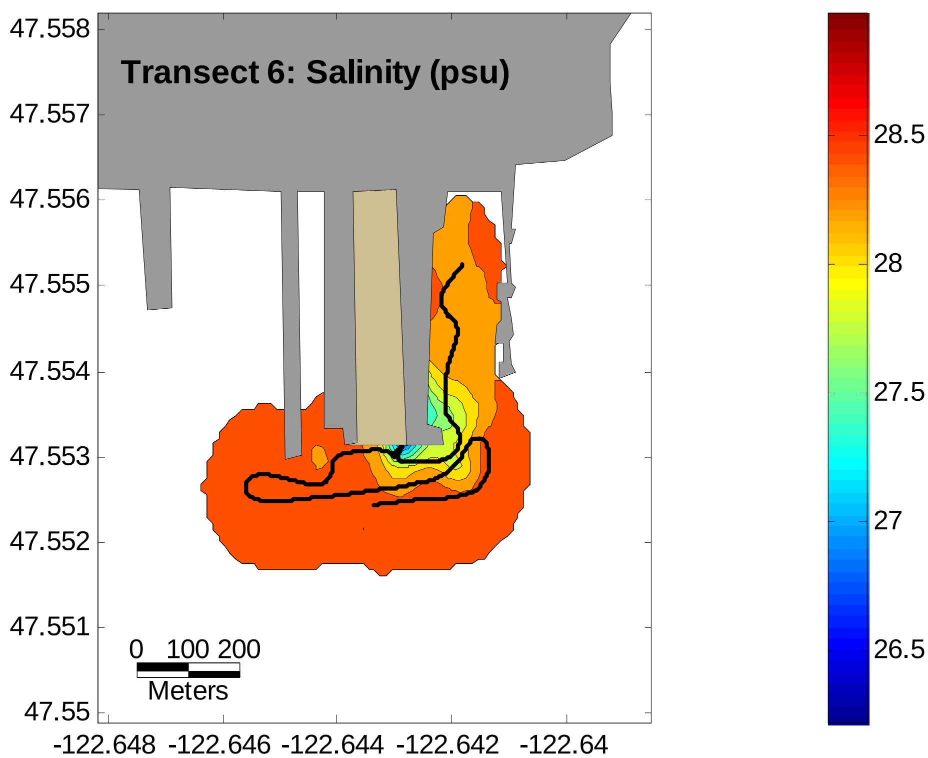
Transect 6: Salinity (psu)
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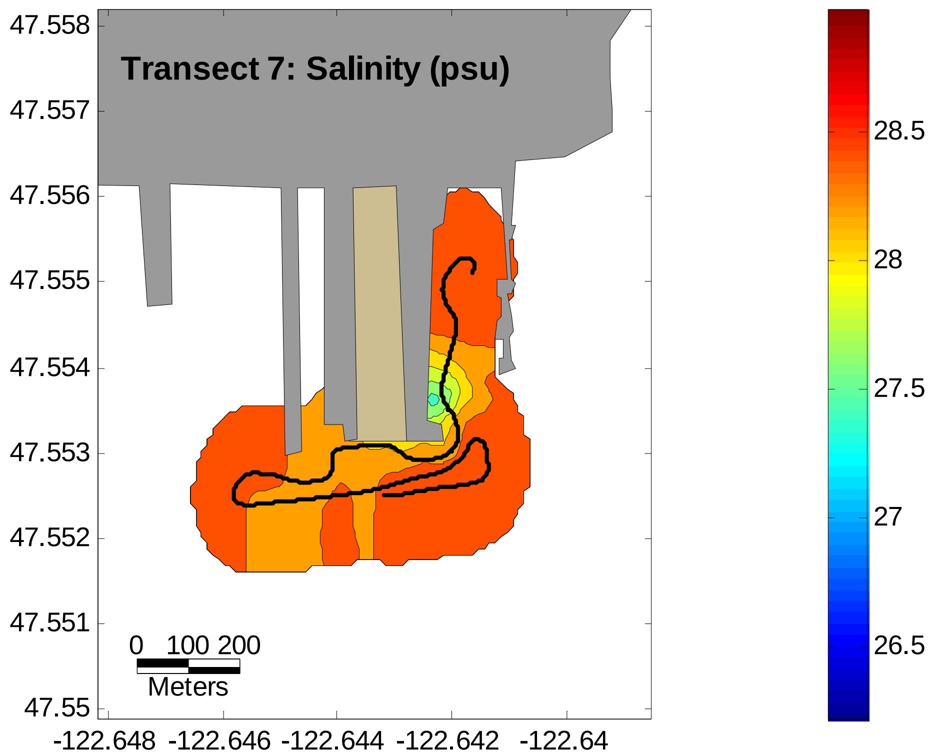
Transect 7: Salinity (psu)
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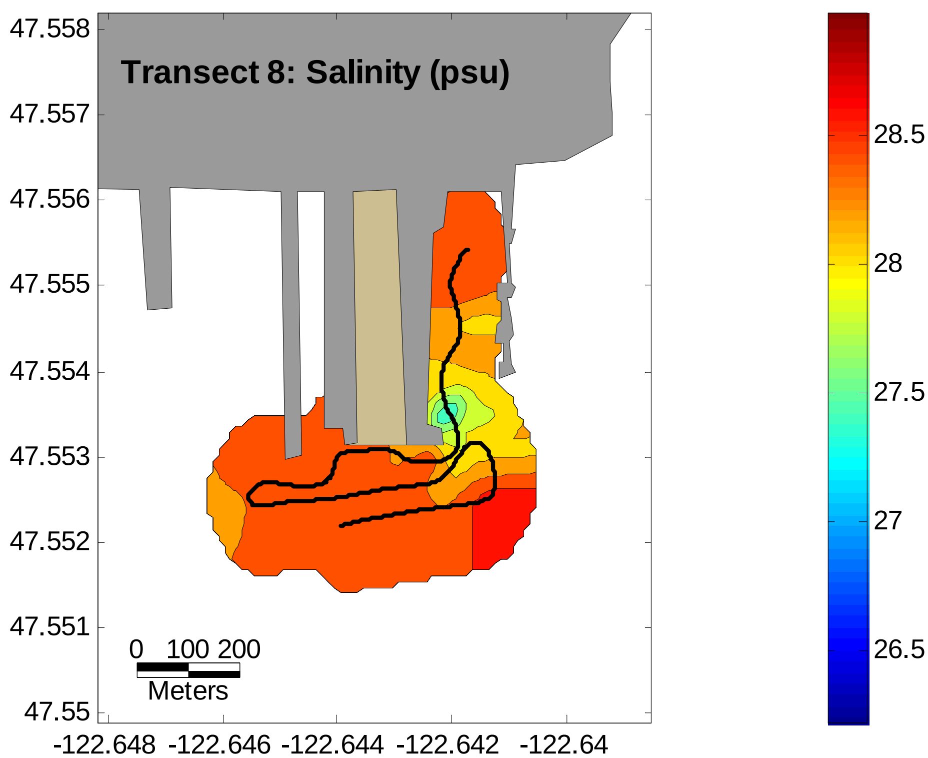
Transect 8: Salinity (psu)
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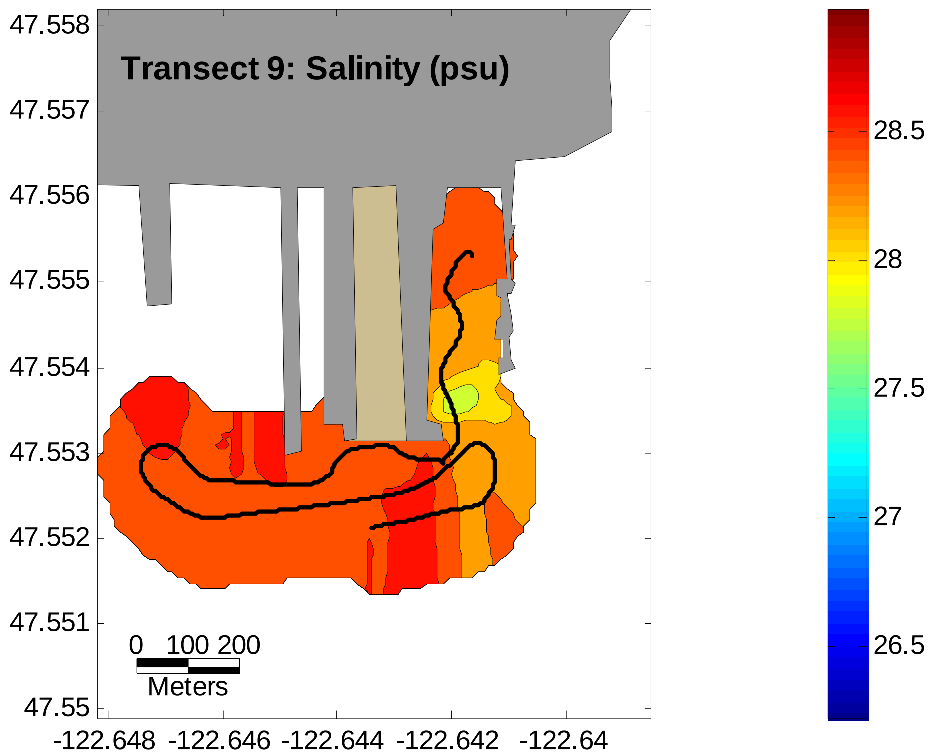

Transect 9: Salinity (psu)
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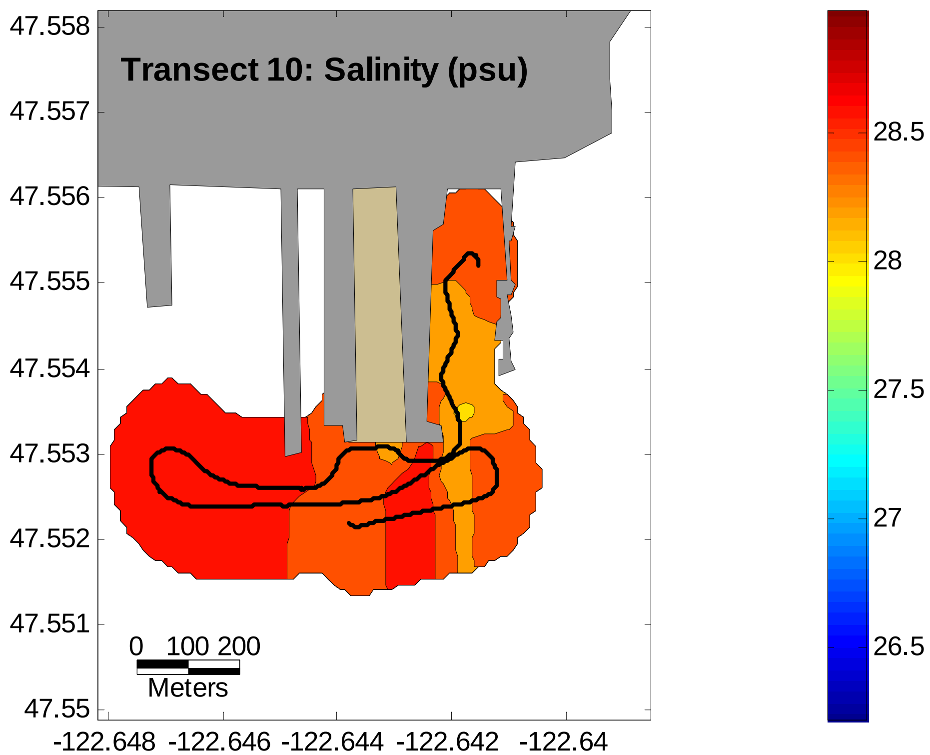

Transect 10: Salinity (psu)
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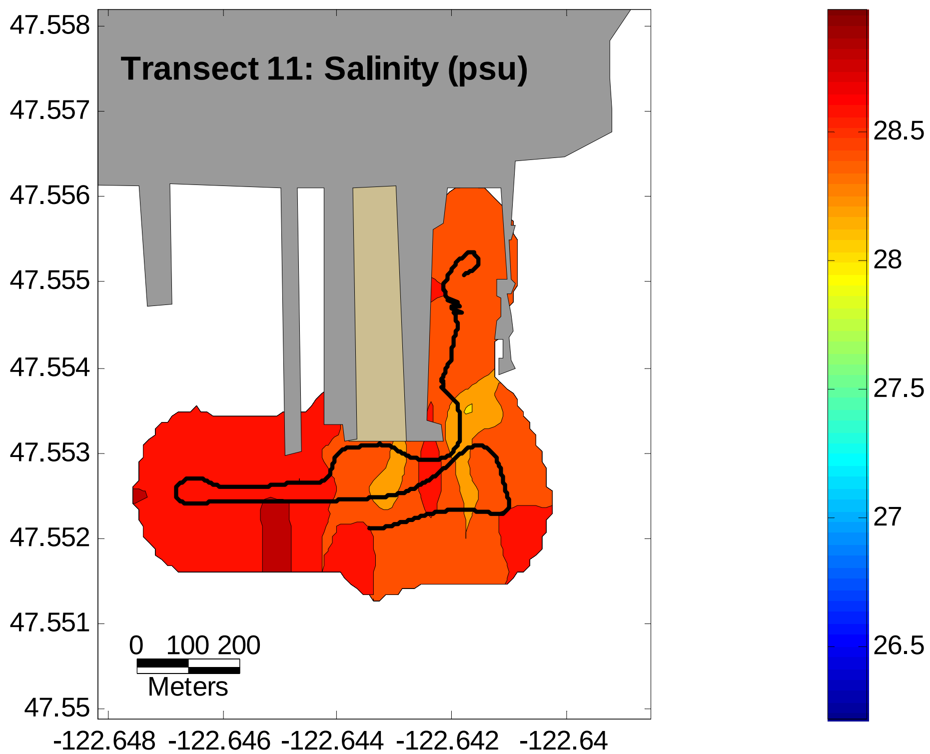
Transect 11: Salinity (psu)
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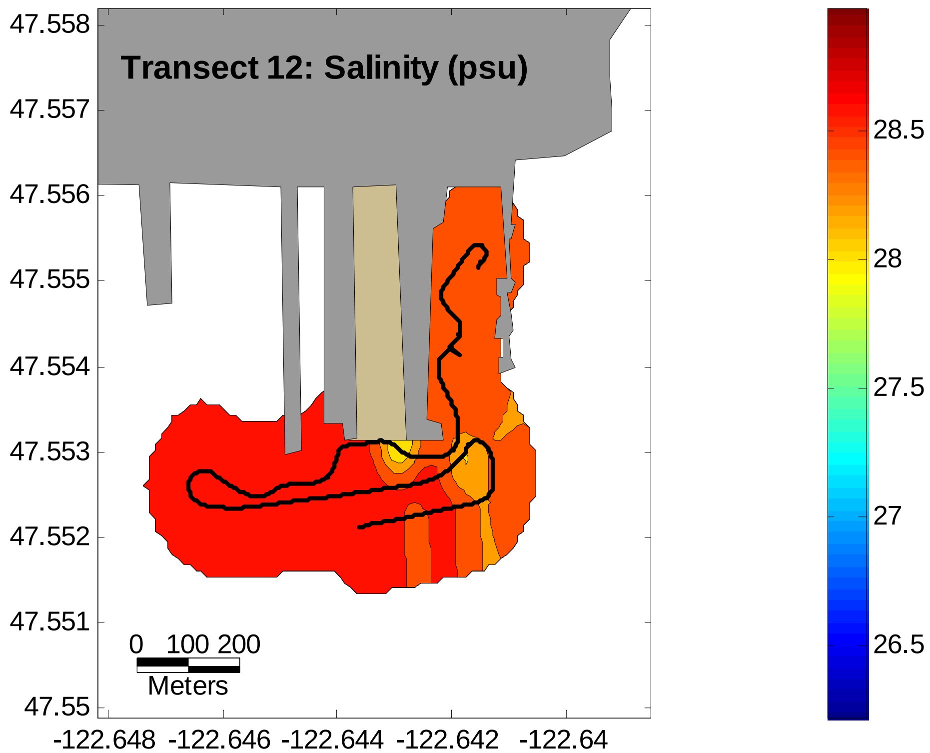
Transect 12: Salinity (psu)
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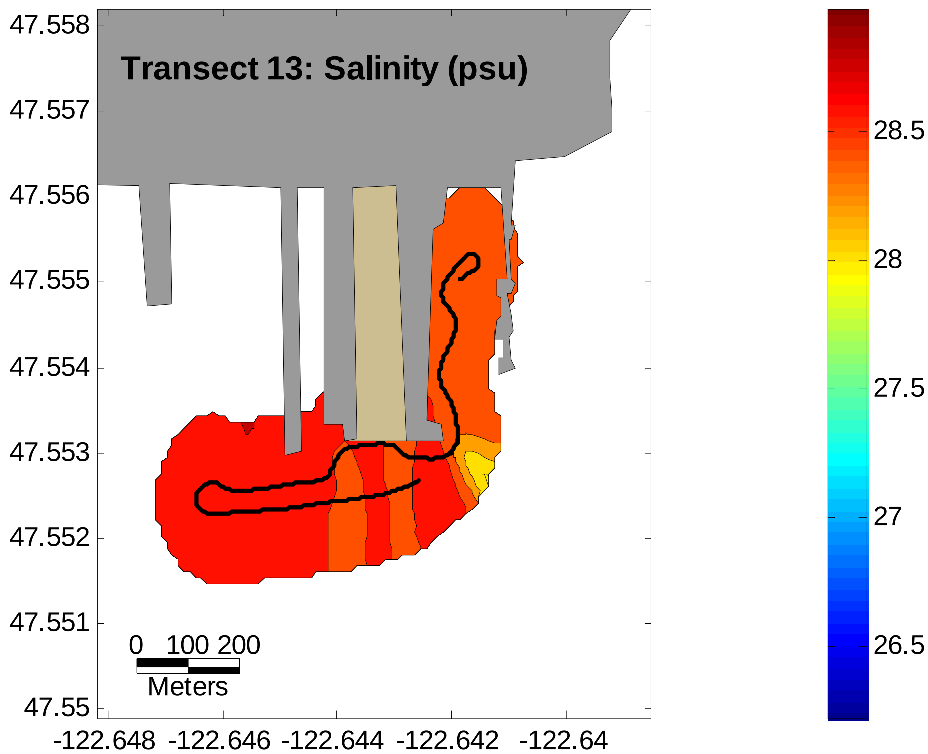
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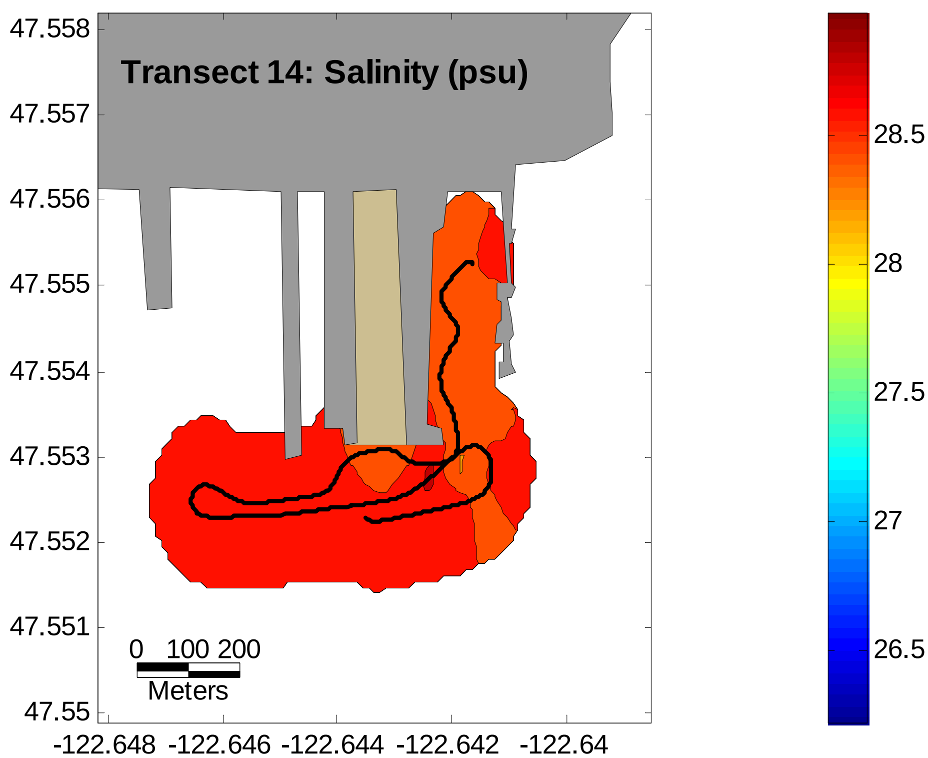
Transect 14: Salinity (psu)
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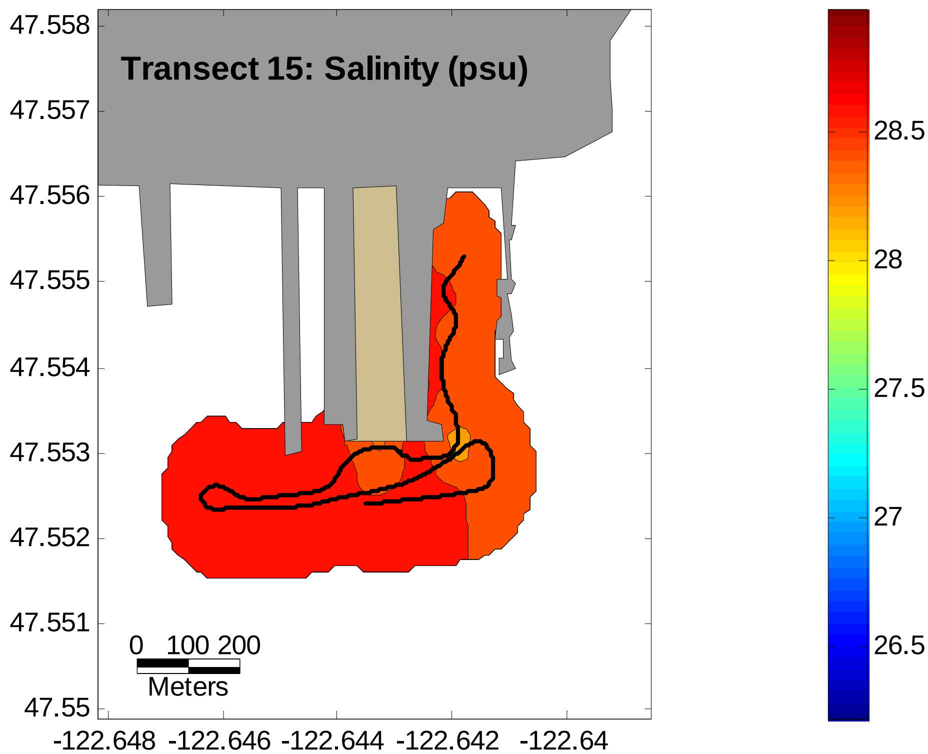

Transcect 15: Salinity (psu)
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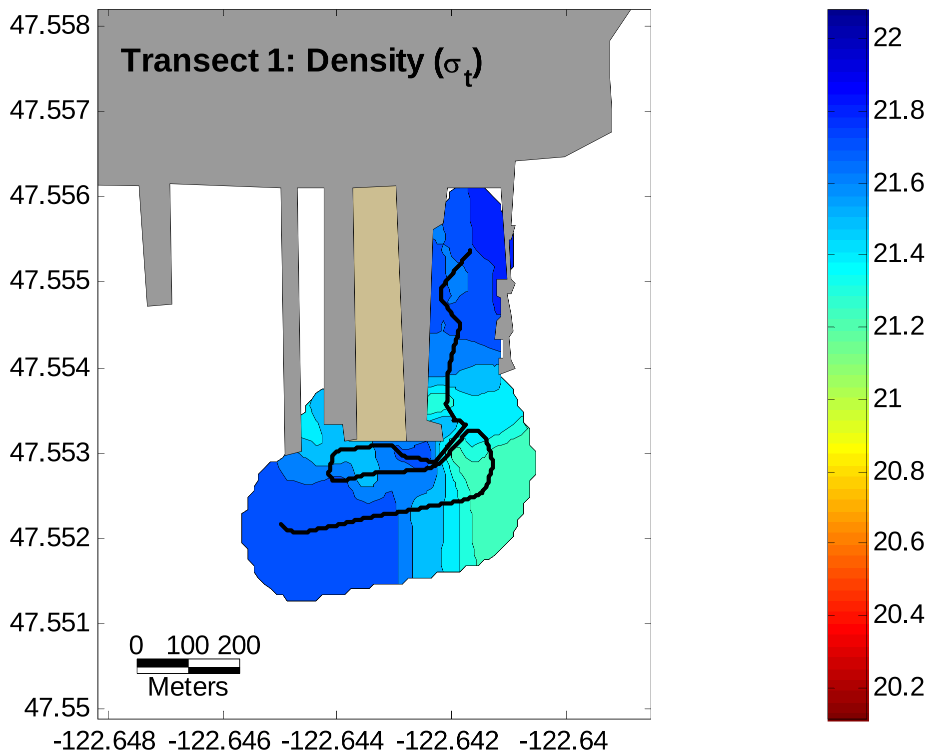
Transect 1: Density (σ_t)
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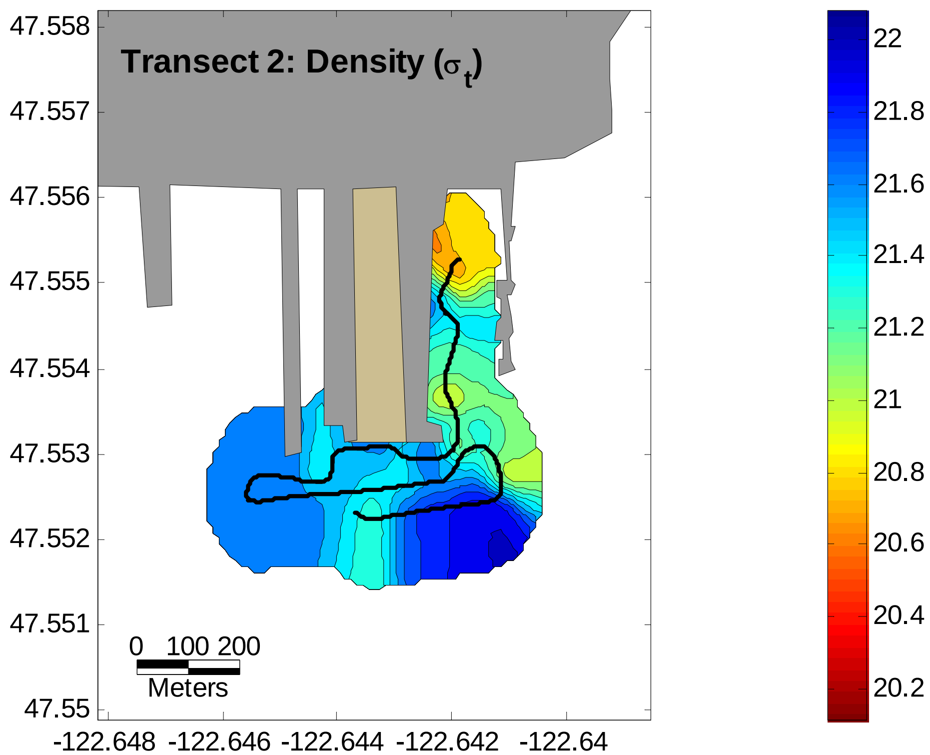
Transect 2: Density (σ_t)
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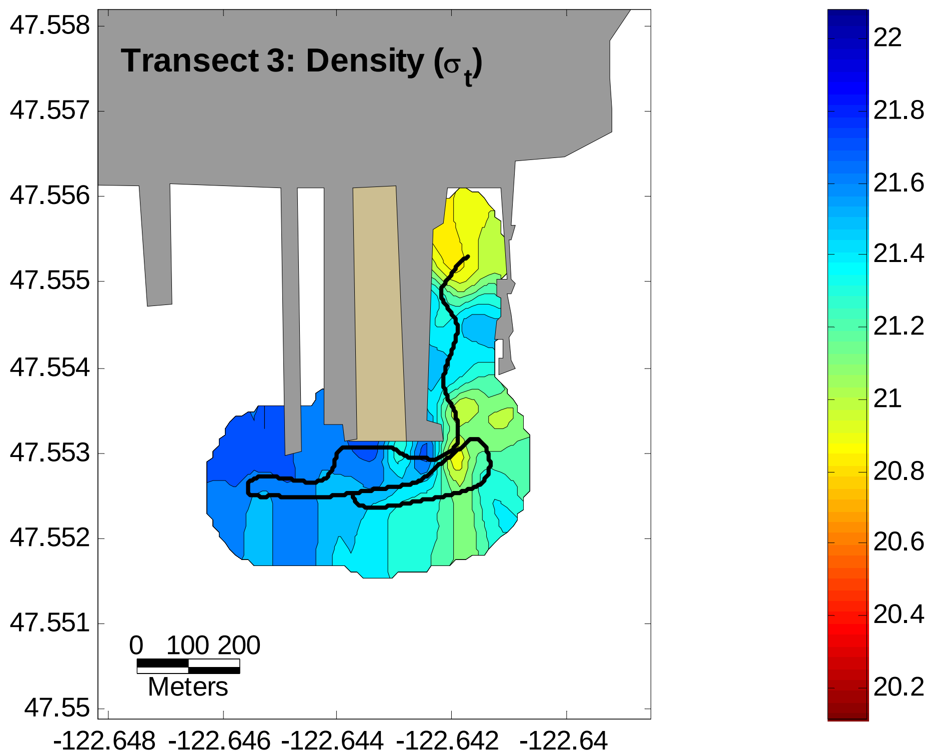
Transect 3: Density (σ_t)
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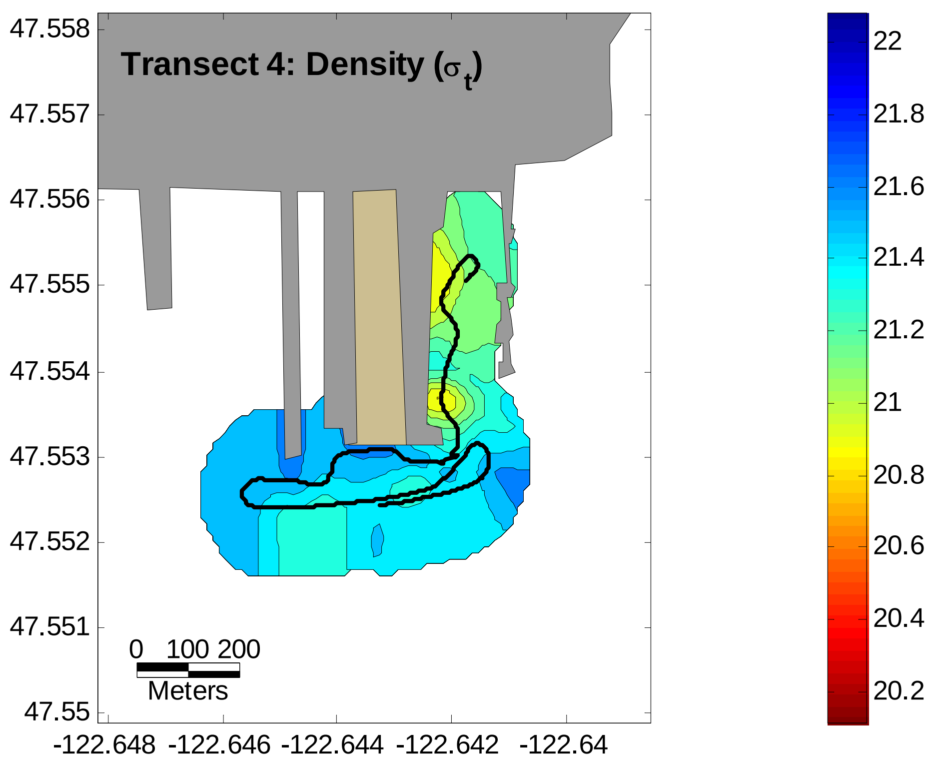
Transect 4: Density (σ_t)
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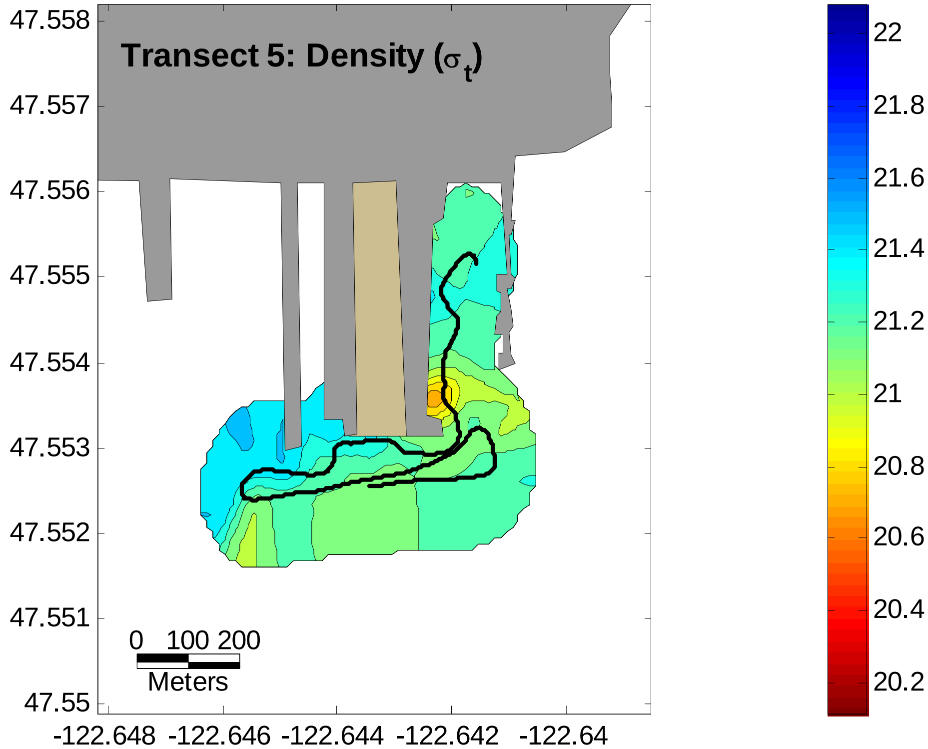
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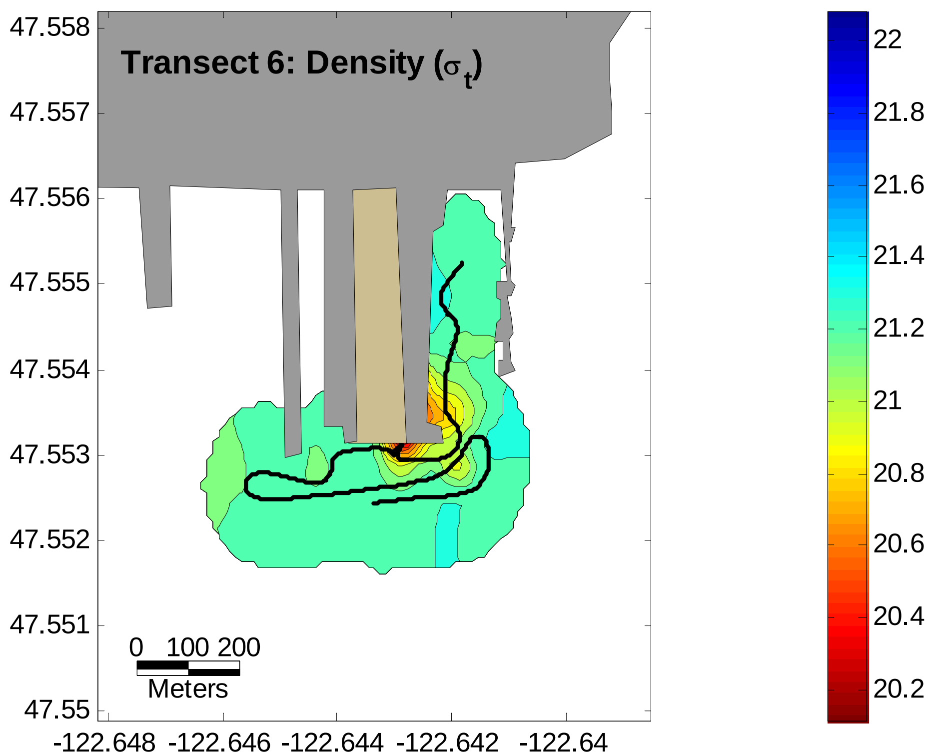
Transect 6: Density (σ_t)
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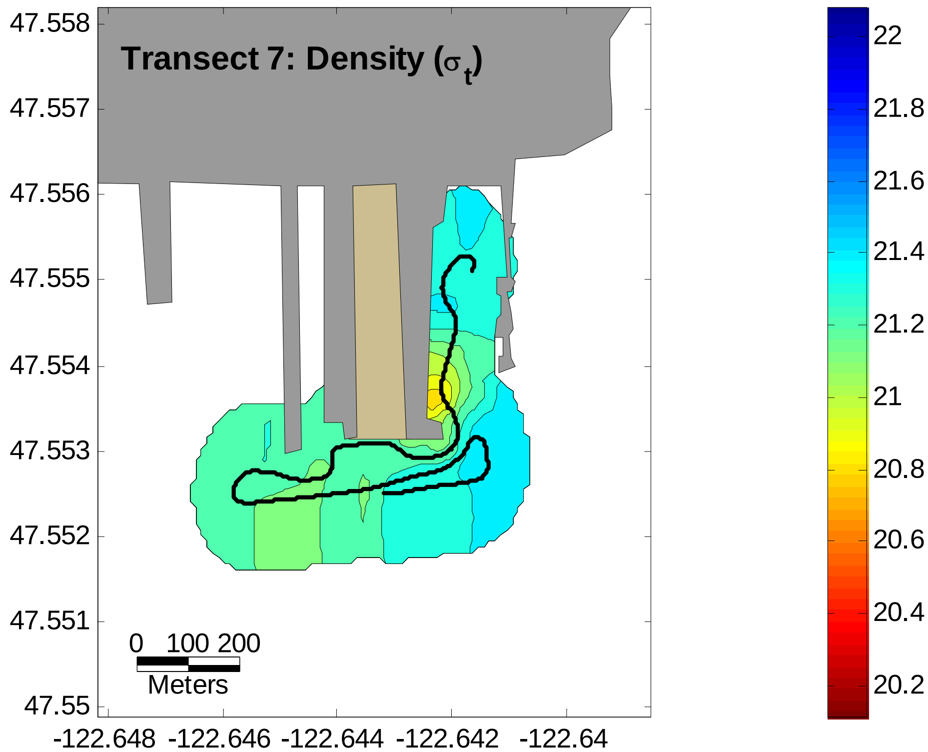
Transect 7: Density (σ_t)
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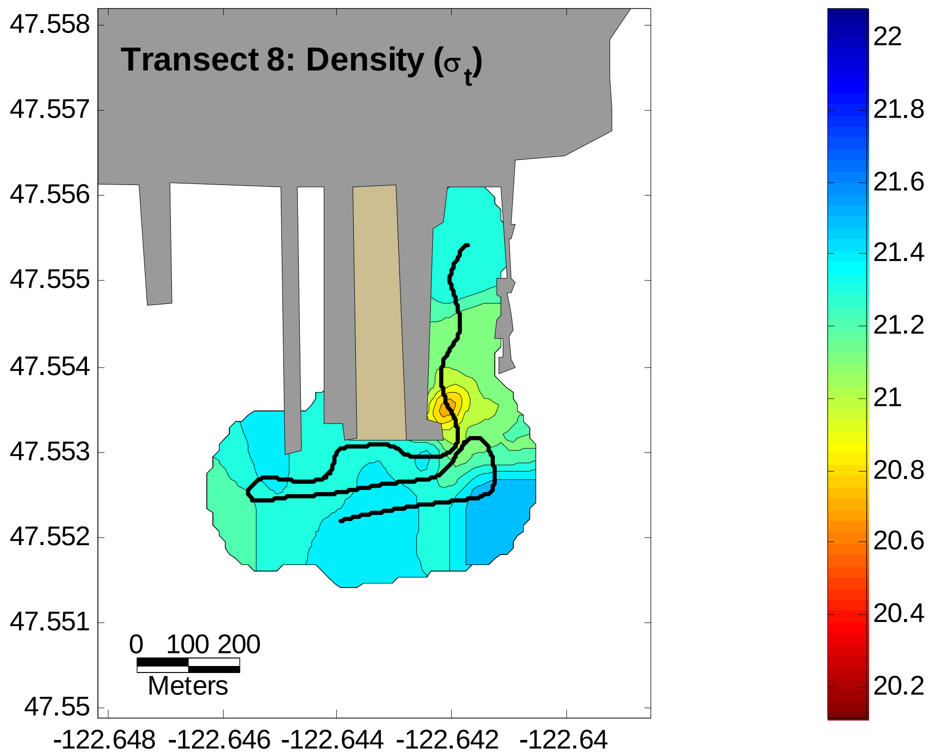
Transect 8: Density (σ_t)
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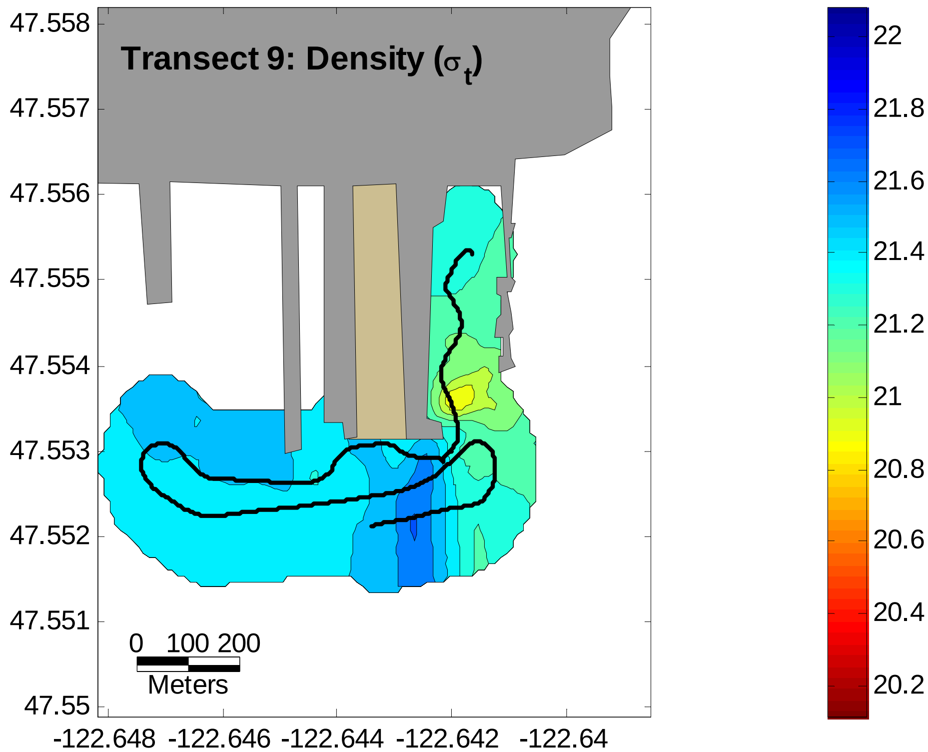

Transect 9: Density (σ_t)
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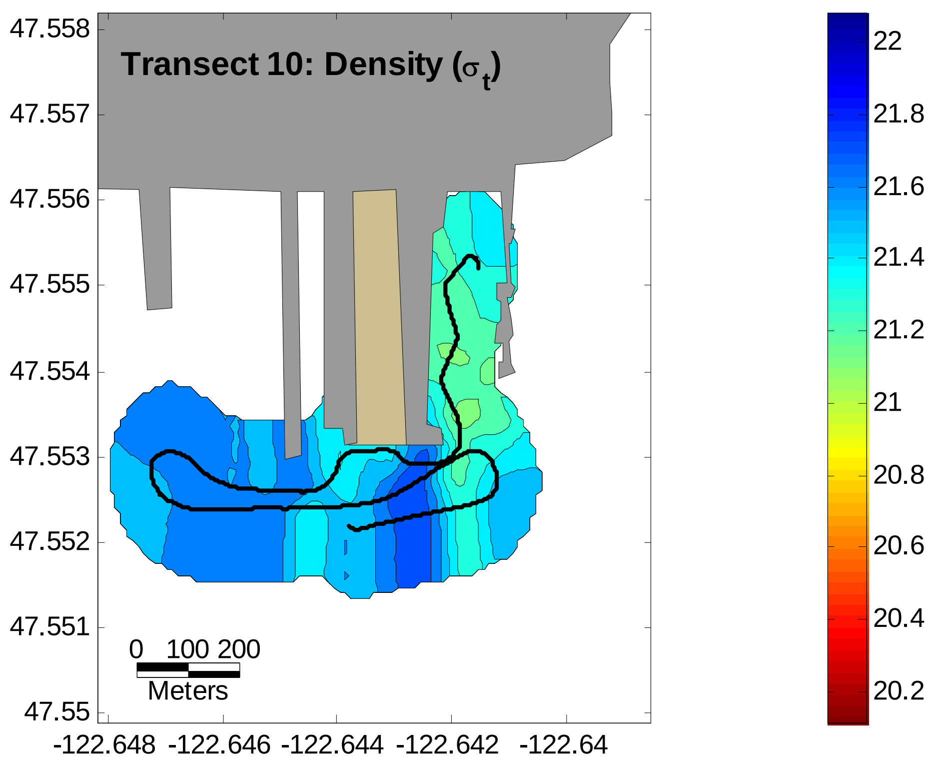

Transect 10: Density (σ_t)
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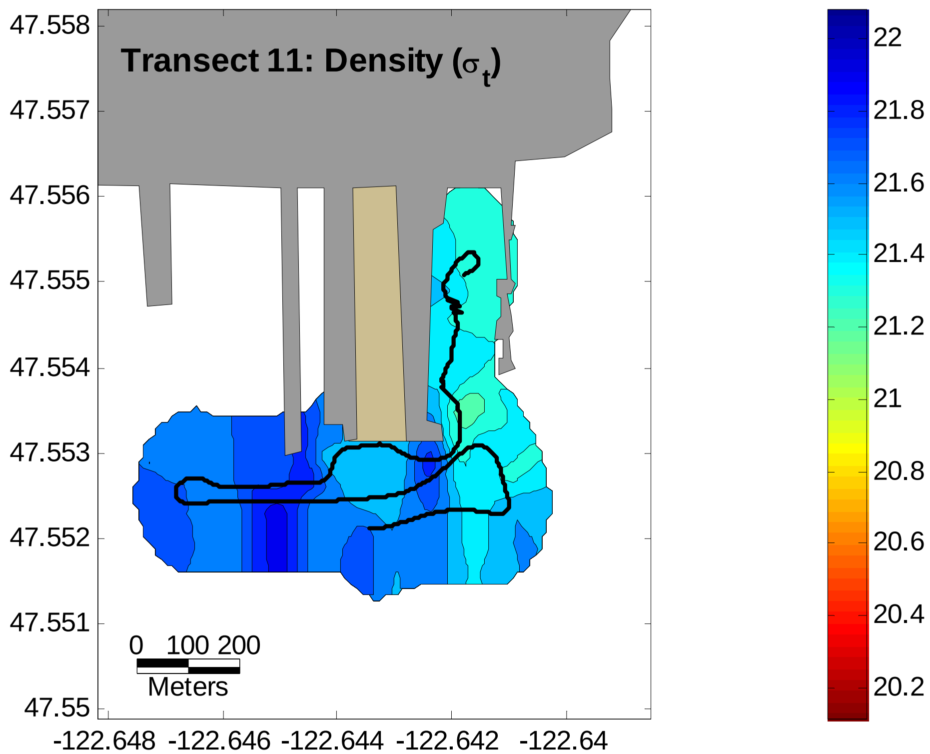
Transect 11: Density (σ_t)
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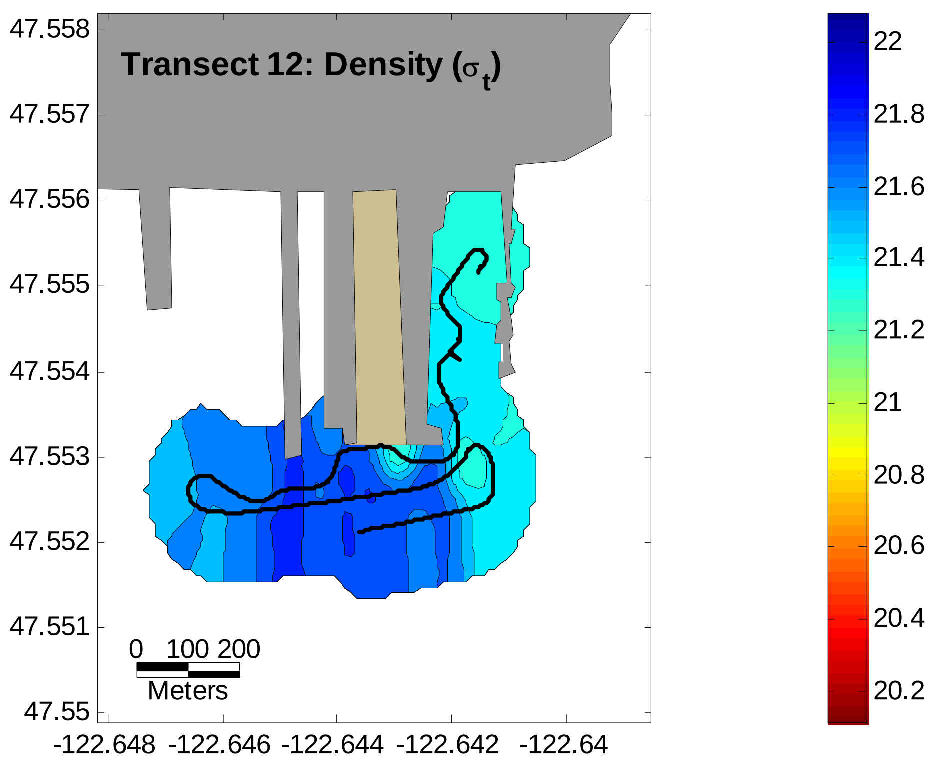
Transect 12: Density (σ_t)
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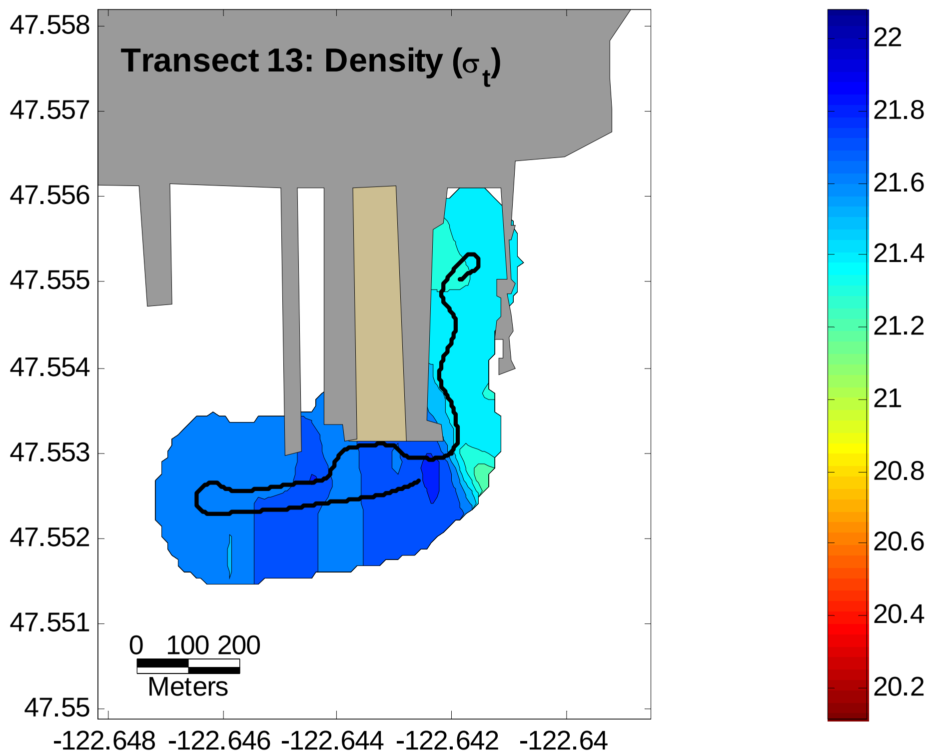

Transect 13: Density (σ_t)
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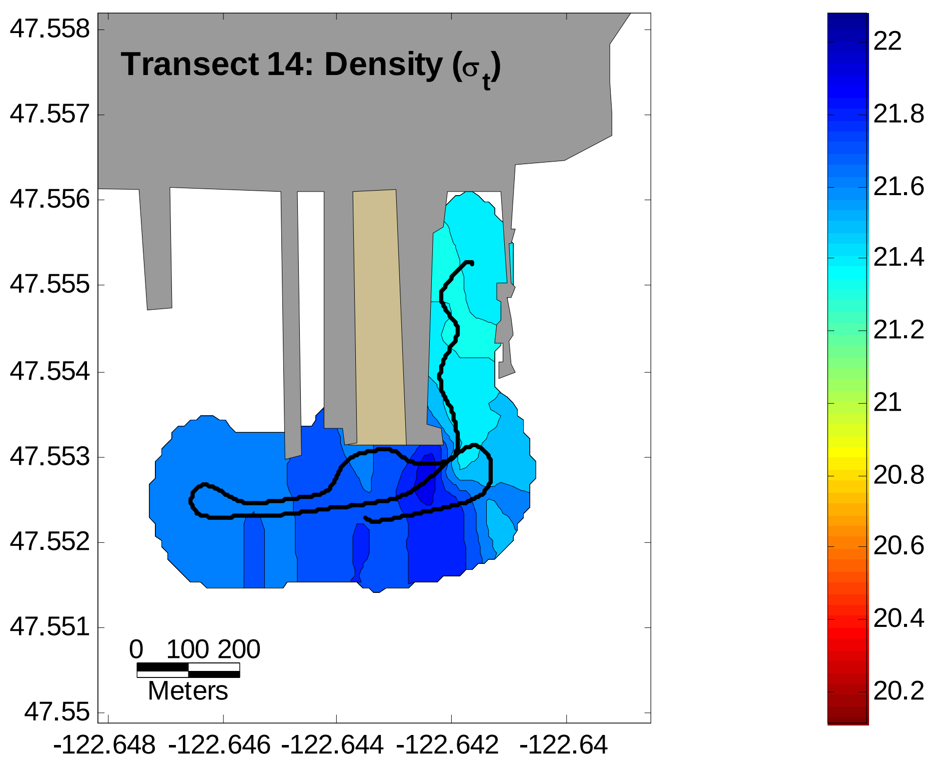

Transect 14: Density (σ_t)
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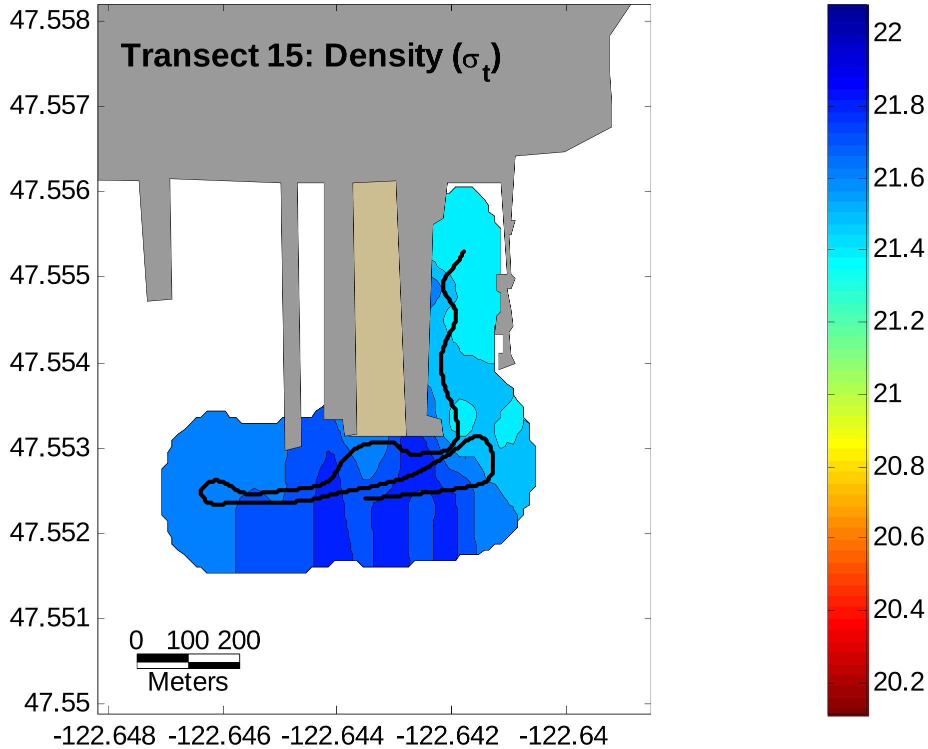

Transect 15: Density (σ_t)
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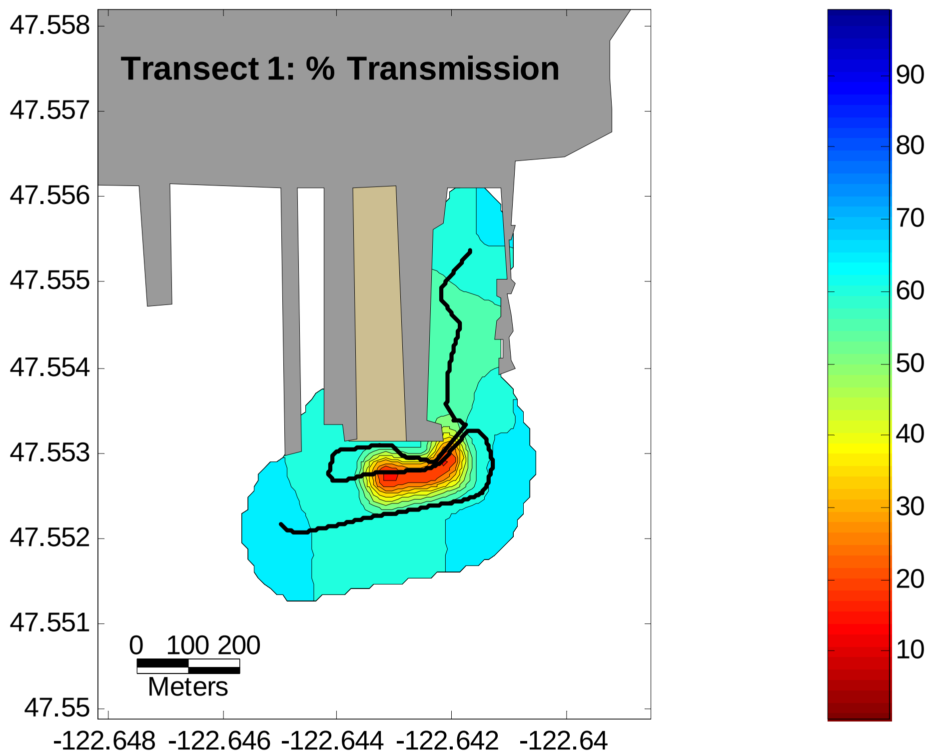
Transcect 1: % Transmission
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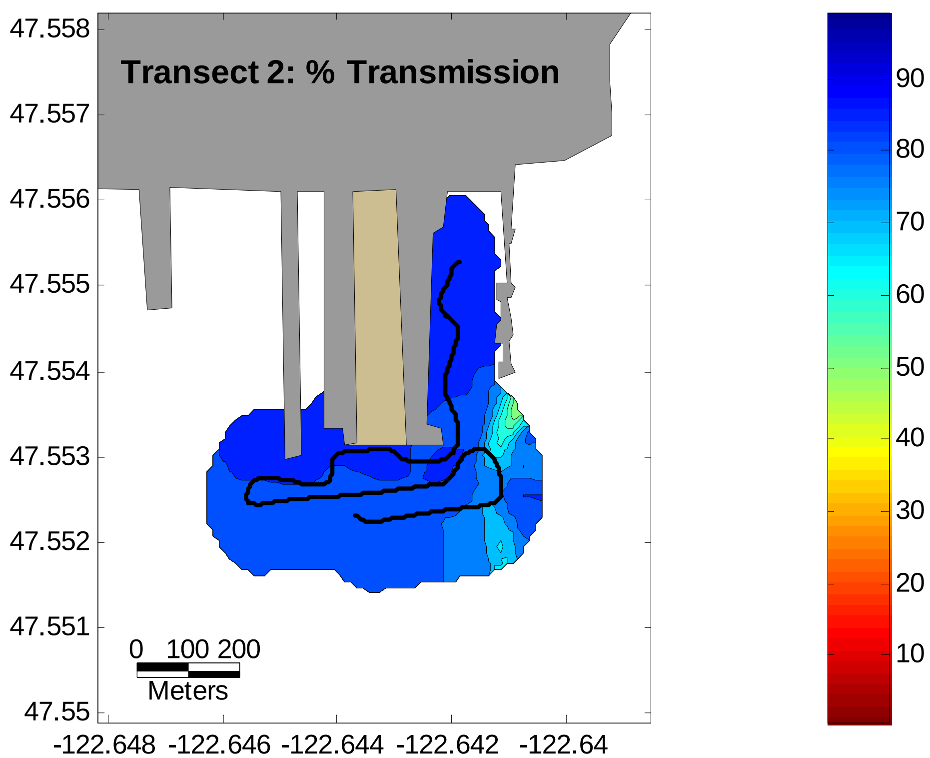
Transect 2: % Transmission
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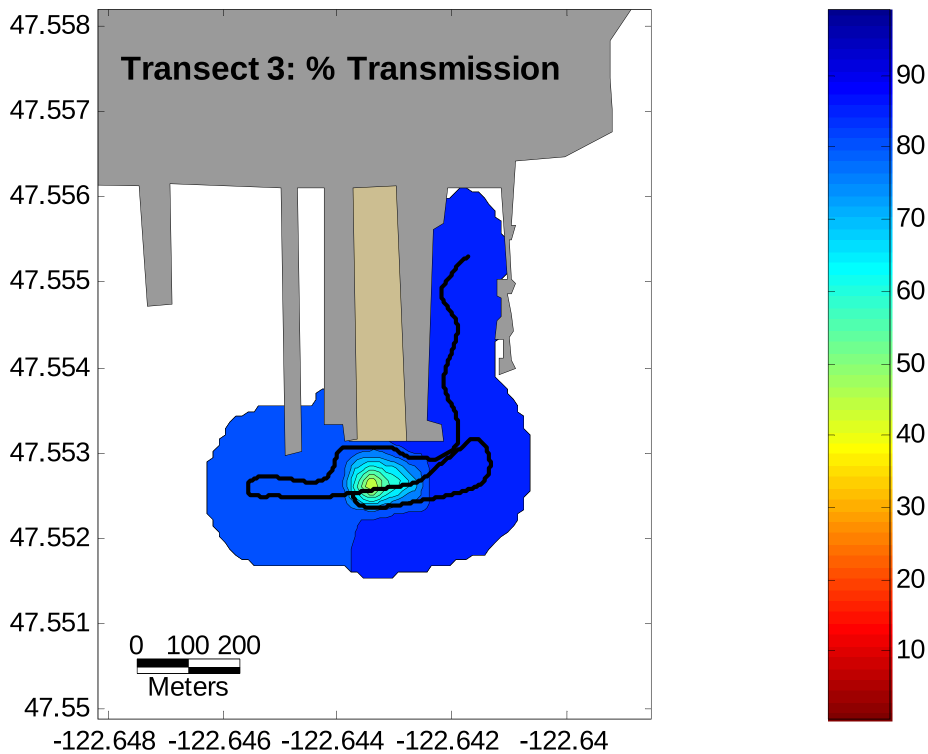
Transect 3: % Transmission
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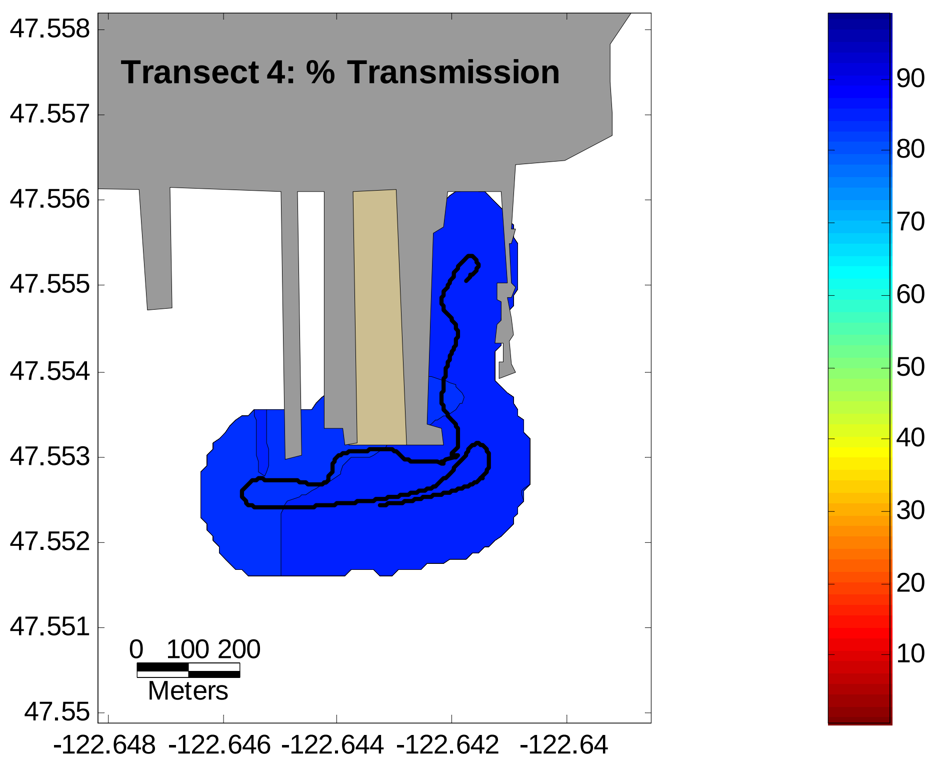
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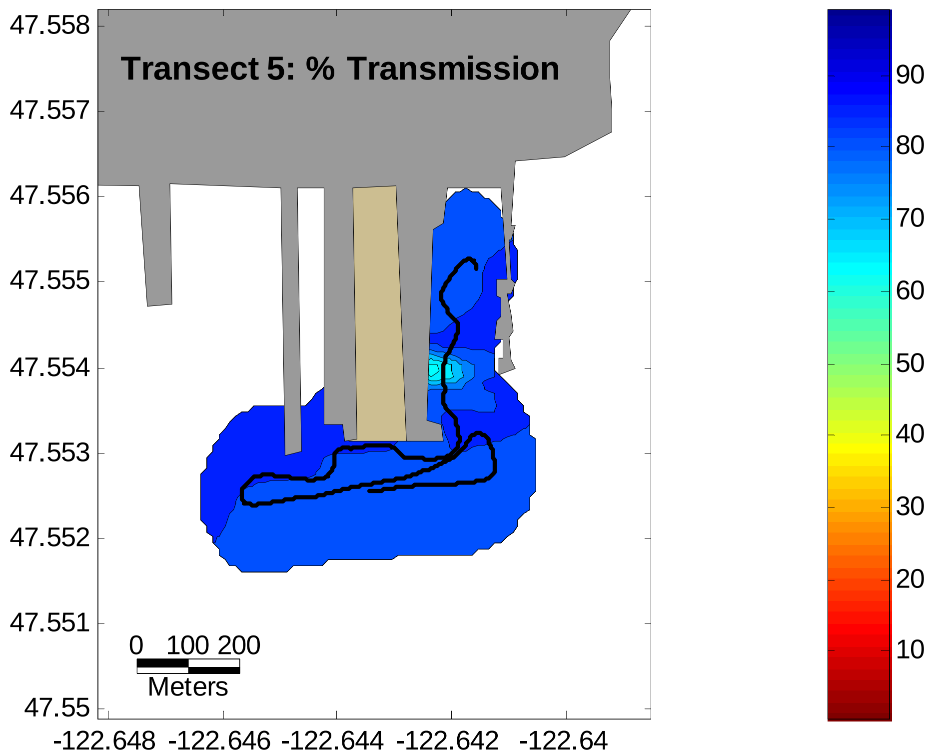
Transect 5: % Transmission
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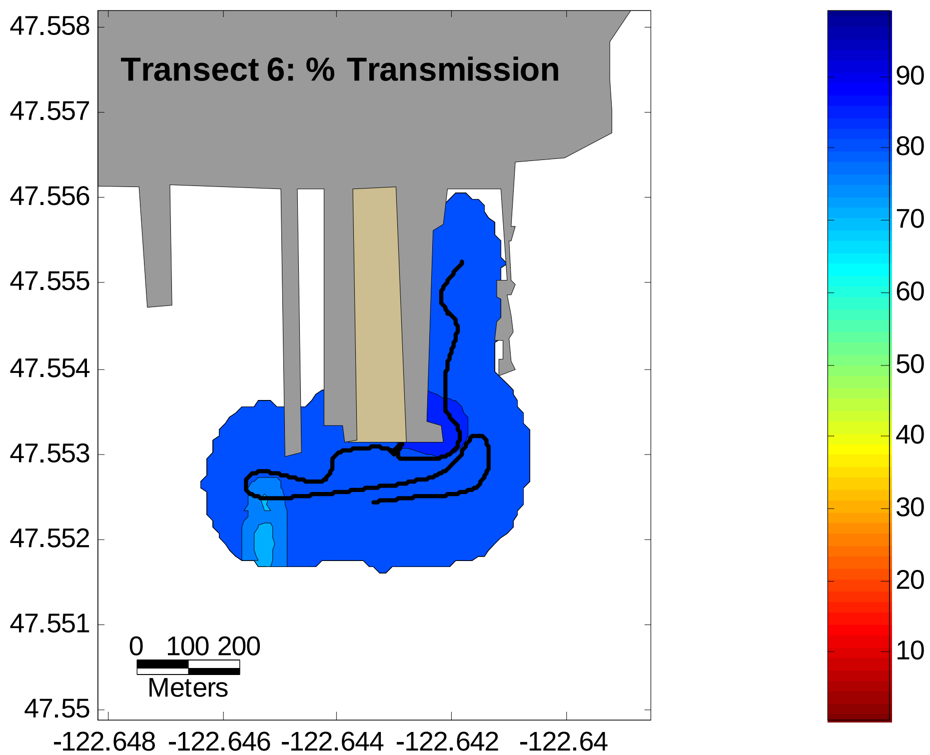
Transect 6: % Transmission
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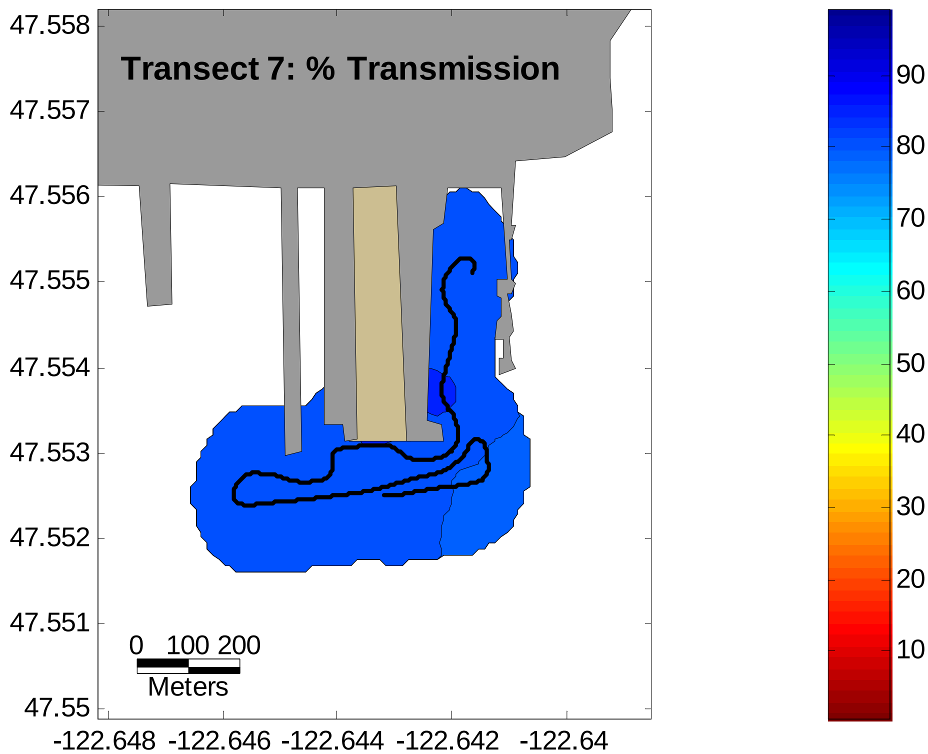
Transect 7: % Transmission
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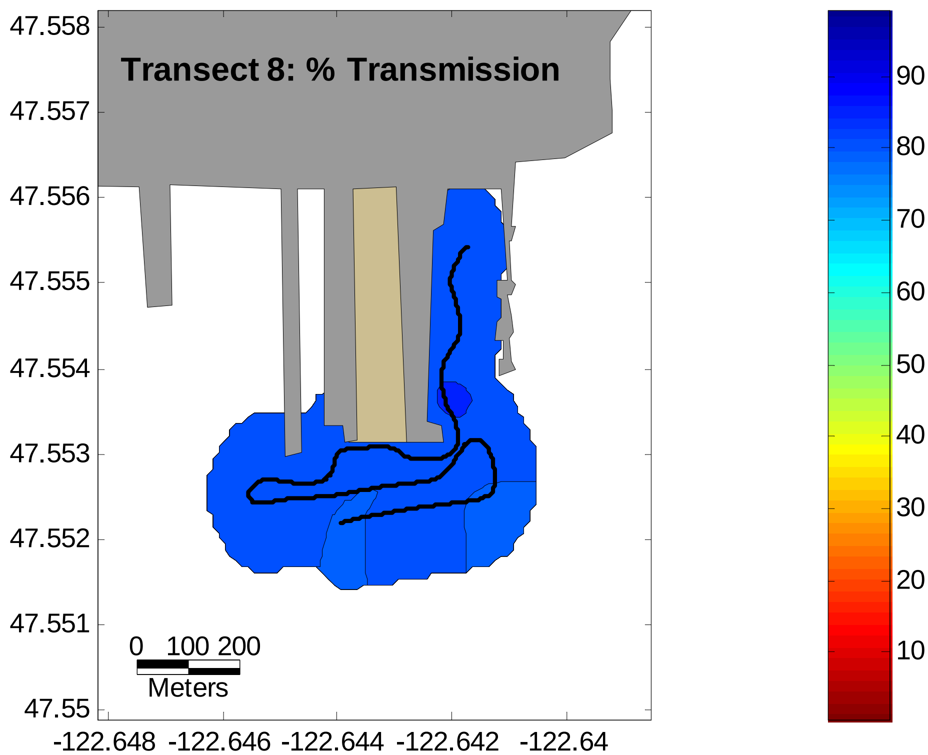
Transect 8: % Transmission
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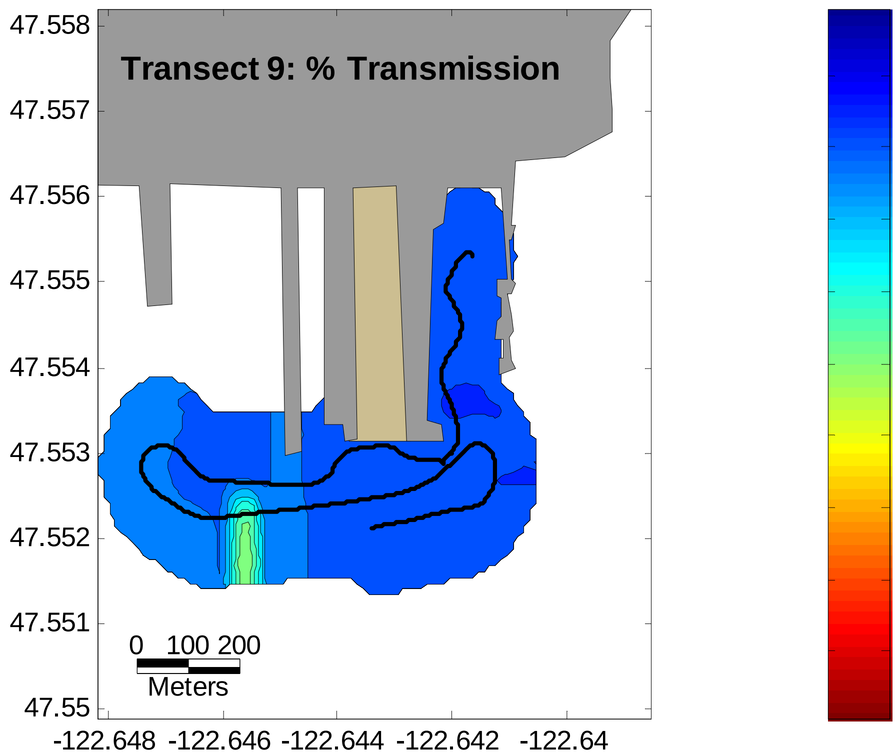
Transect 9: % Transmission
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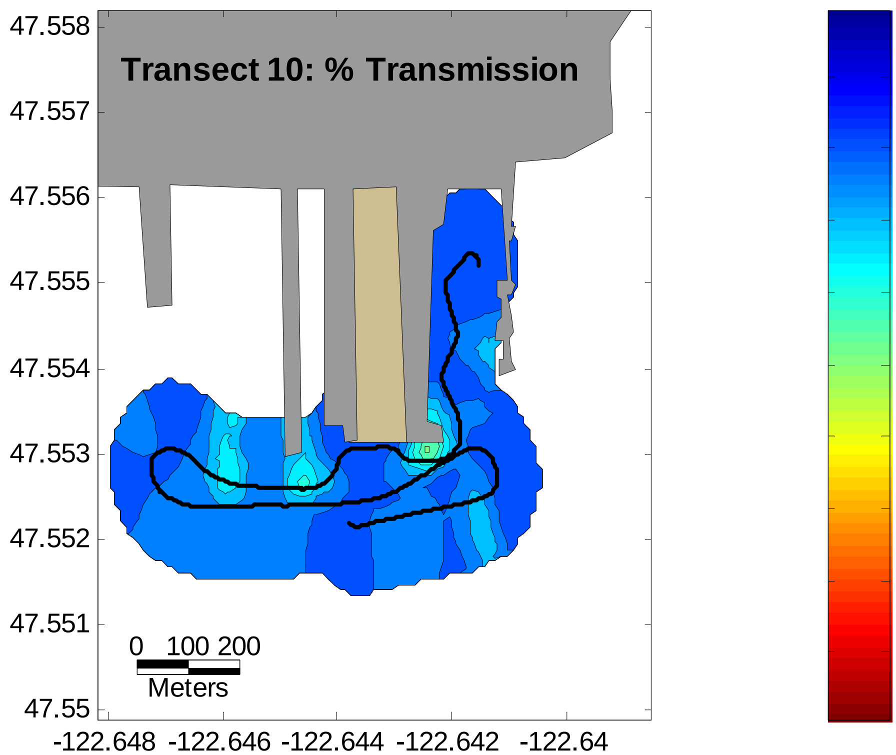
Transect 10: % Transmission
47.558
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47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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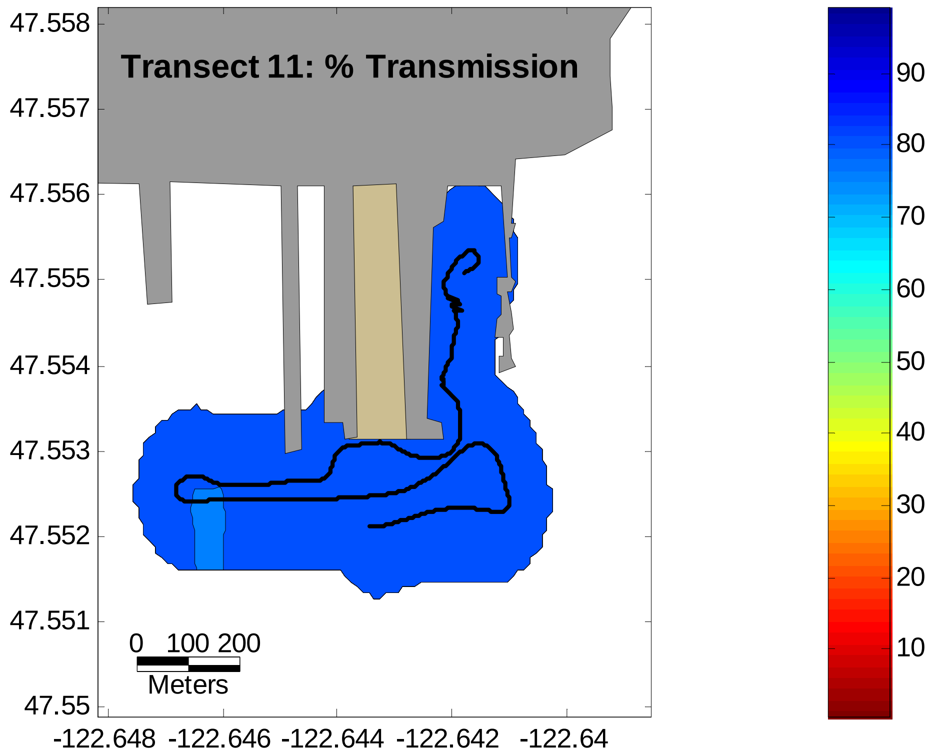
Transect 11: % Transmission
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47.557
47.556
47.555
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47.552
47.551
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0 100 200
Meters
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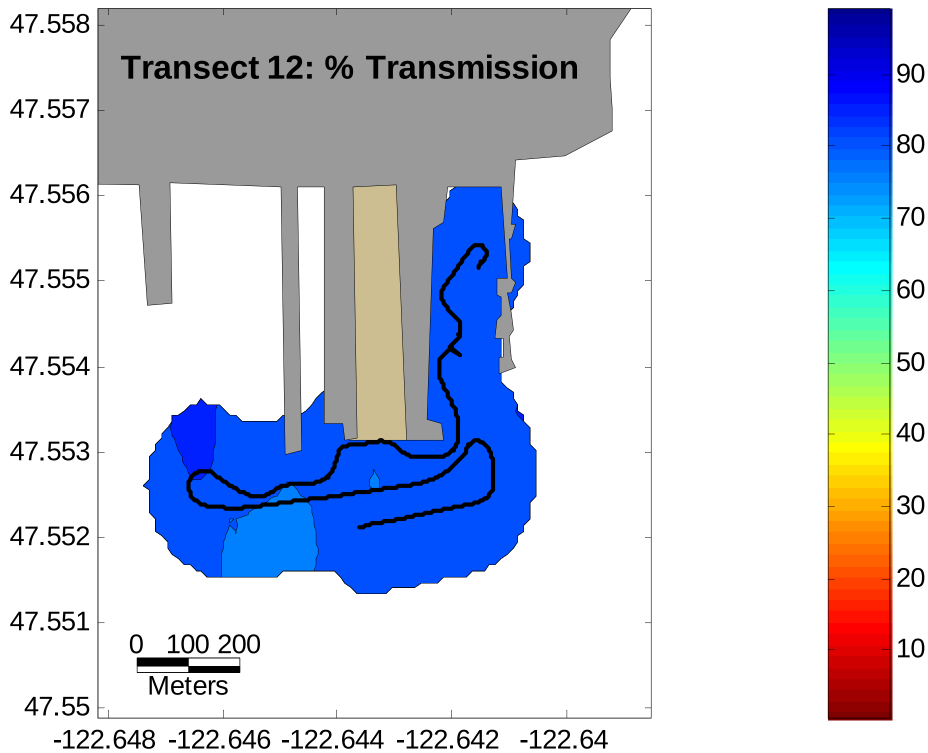
Transect 12: % Transmission
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47.556
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47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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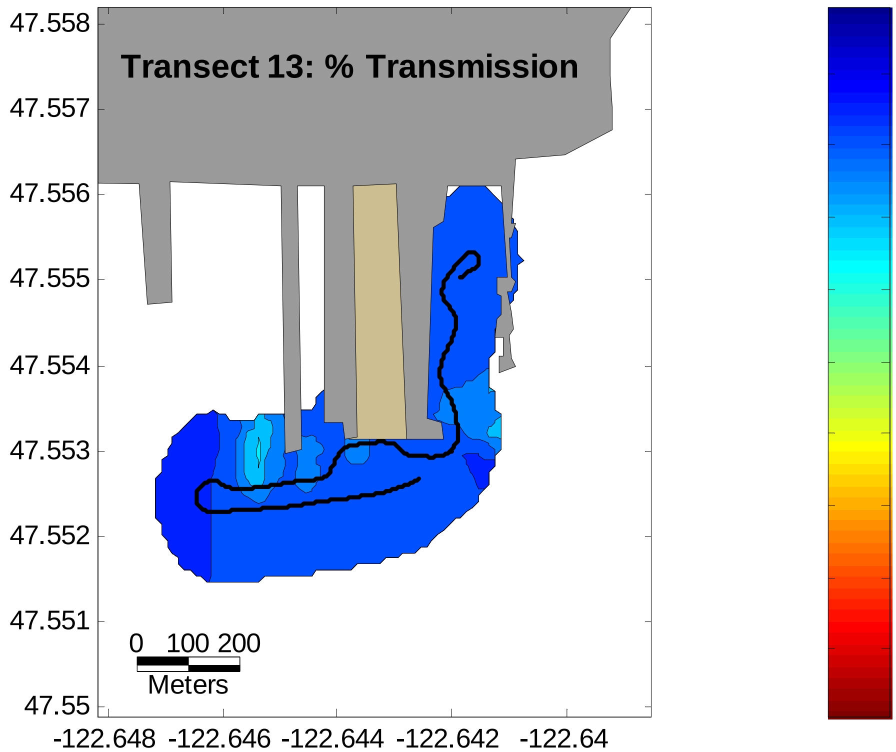
Transect 13: % Transmission
47.558
47.557
47.556
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0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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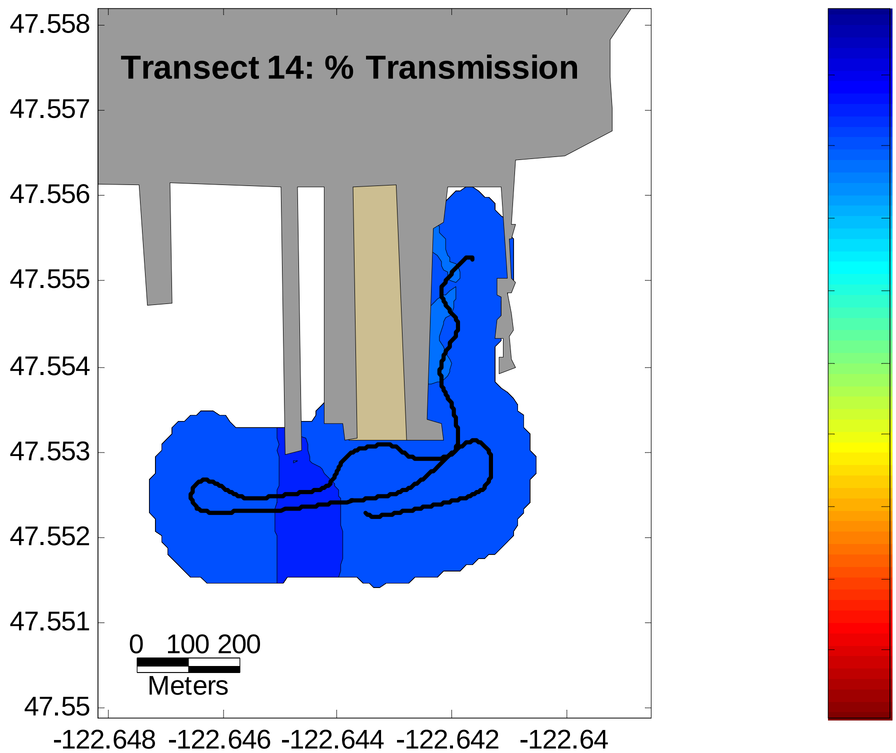
Transect 14: % Transmission
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47.556
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0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
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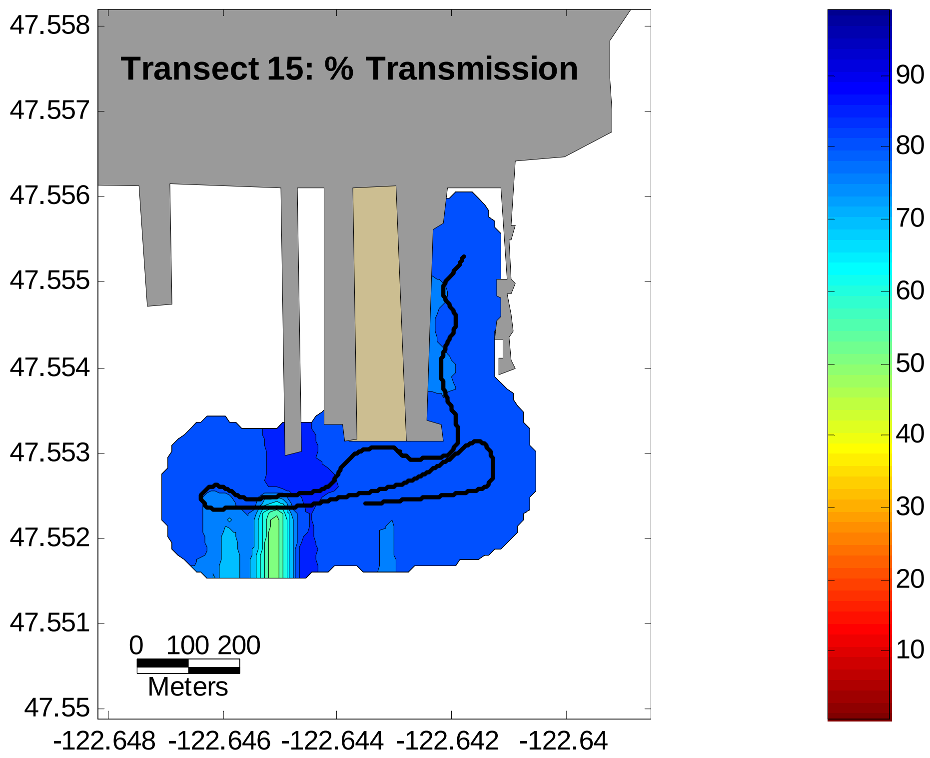
Transect 15: % Transmission
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
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80
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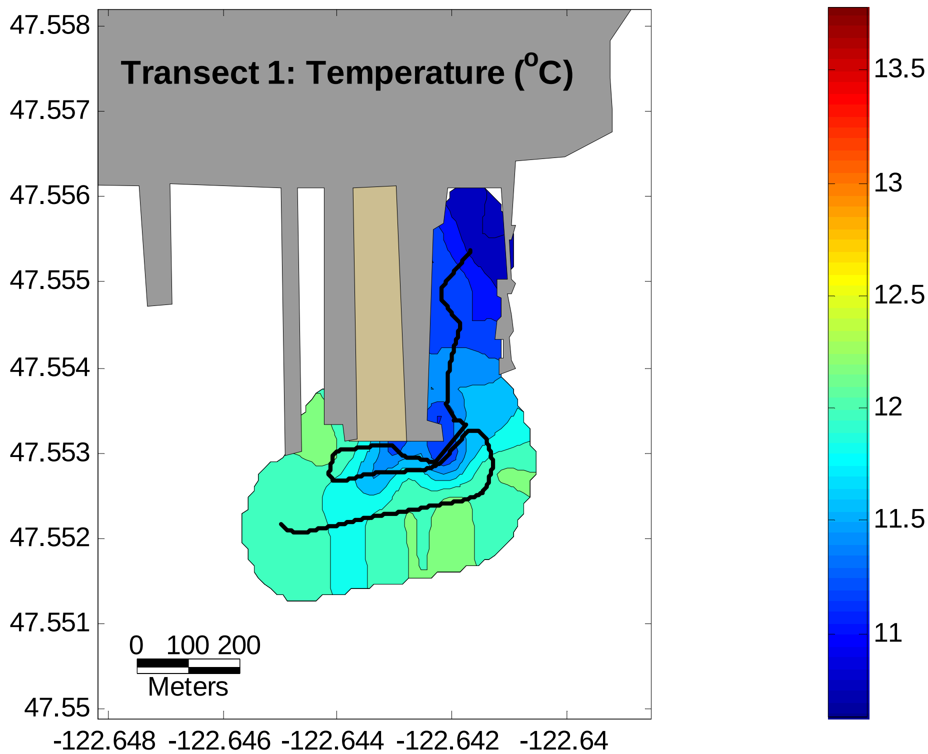

Transect 1: Temperature (^oC)
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47.557
47.556
47.555
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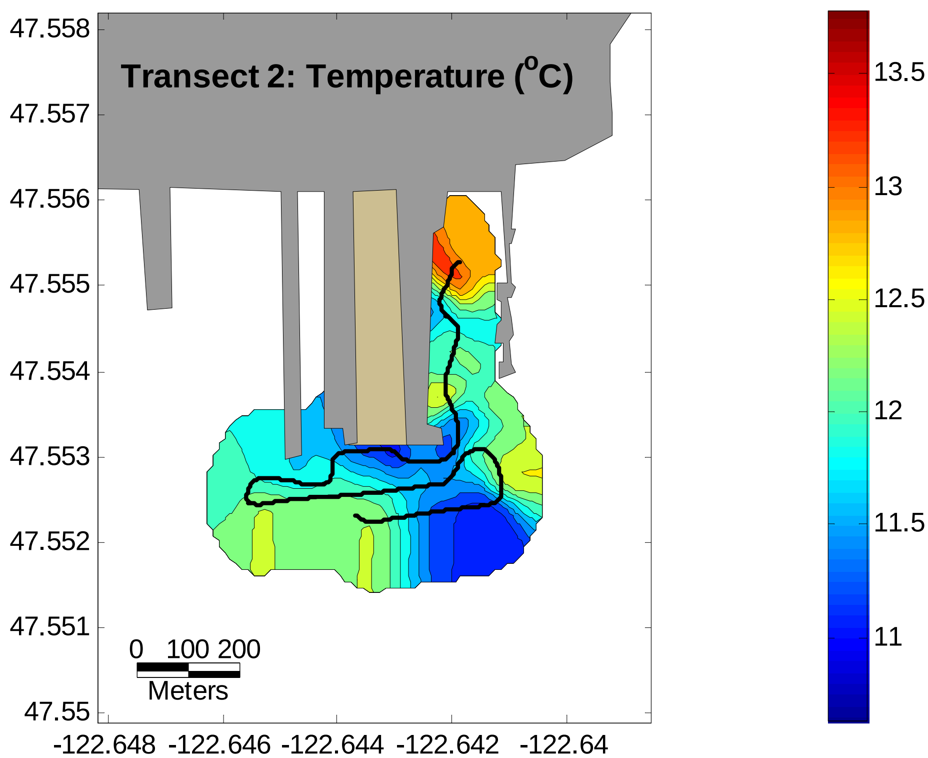
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
13
12.5
12
11.5
11



Transect 2: Temperature (^oC)
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
13
12.5
12
11.5
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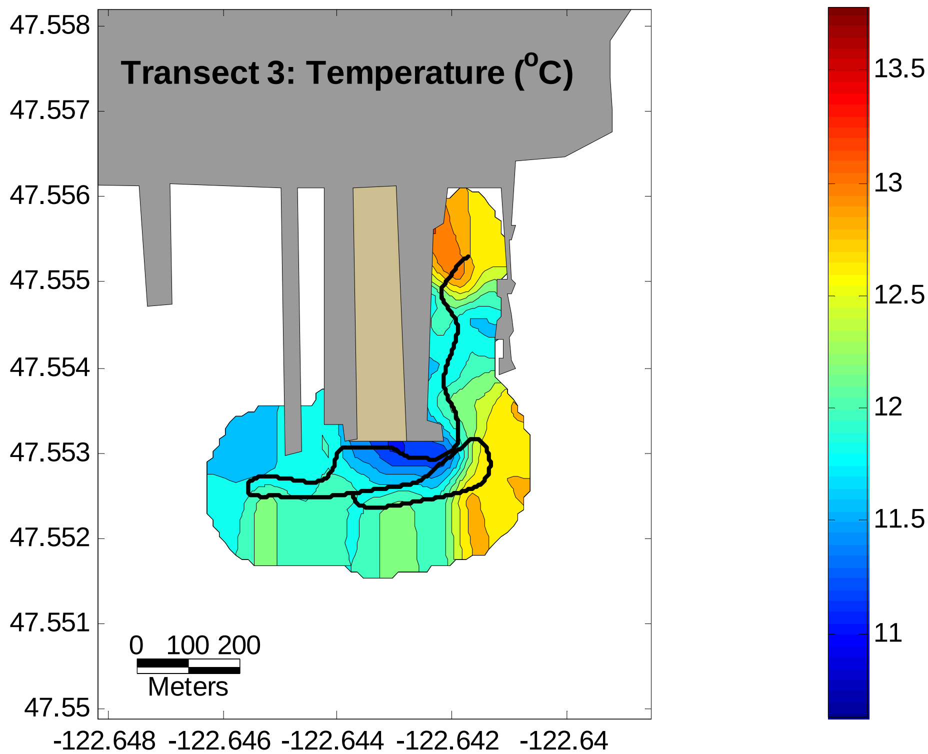
Transcect 3: Temperature (°C)
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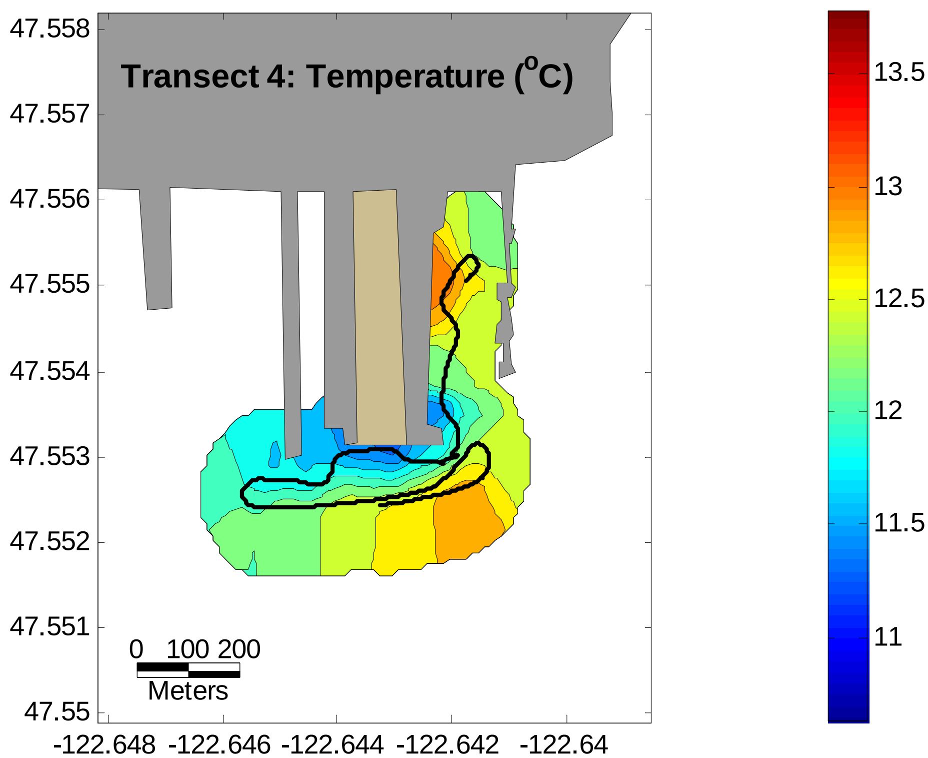
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
13
12.5
12
11.5
11


Transect 4: Temperature (°C)
47.558
47.557
47.556
47.555
47.554
47.553
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47.551
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-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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12.5
12
11.5
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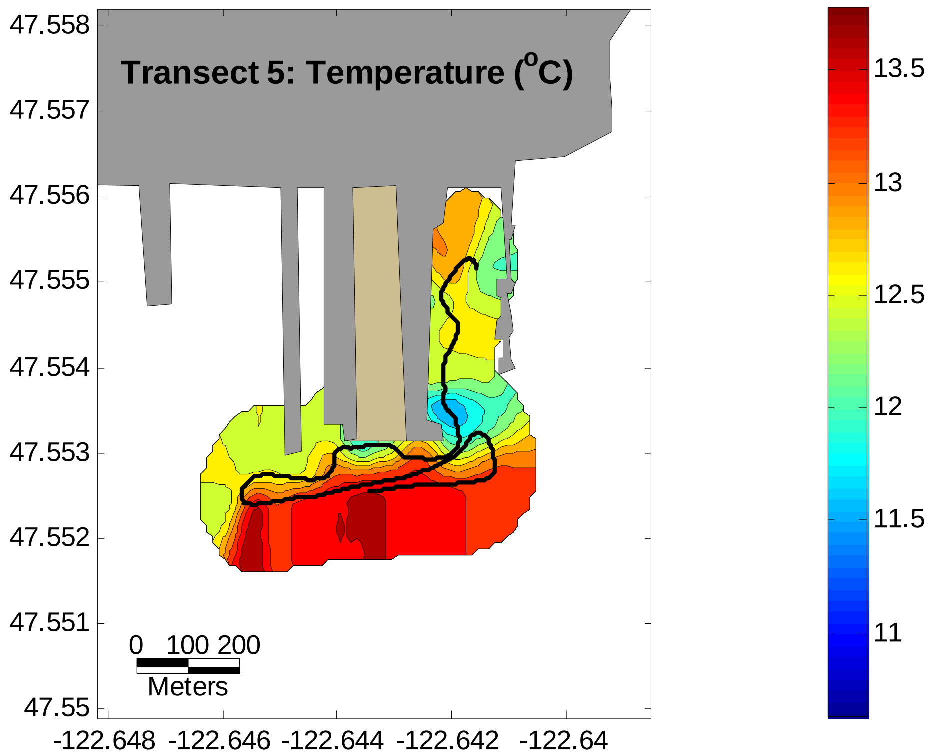
Transect 5: Temperature (^oC)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
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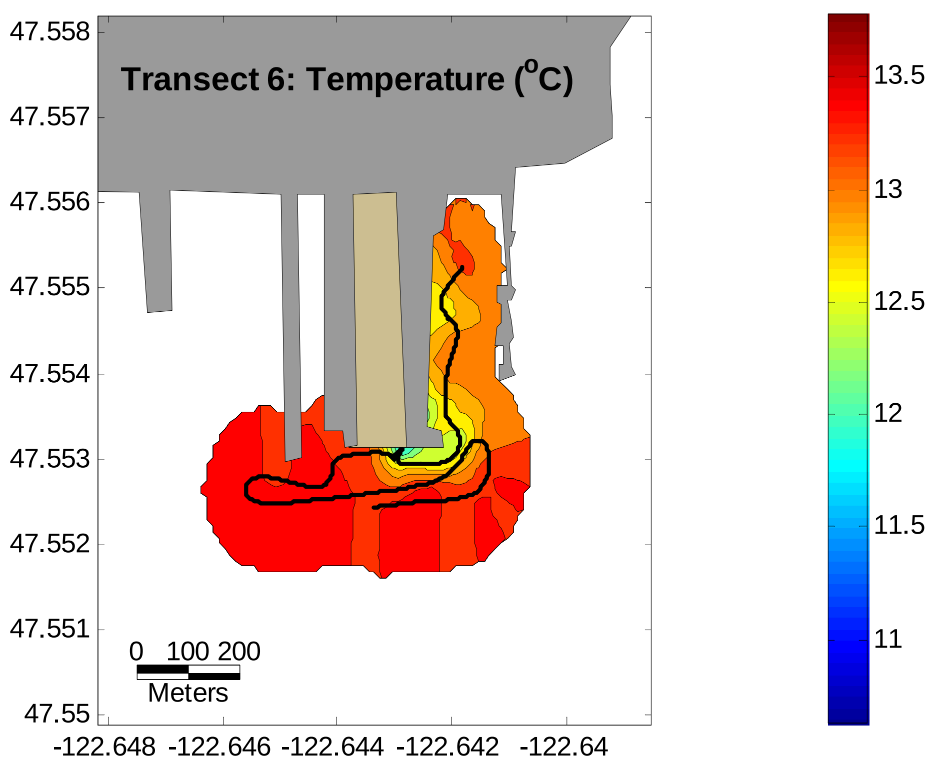
12.5
12
11.5
11


Transect 6: Temperature (^oC)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
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12.5
12
11.5
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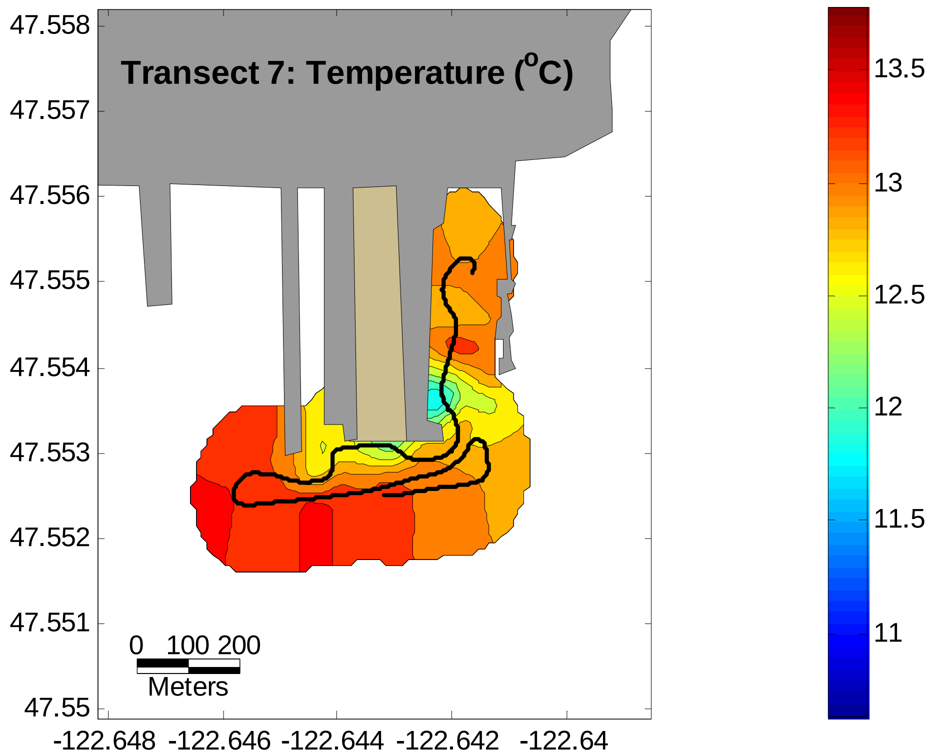
Transcect 7: Temperature (°C)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
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0 100 200
Meters
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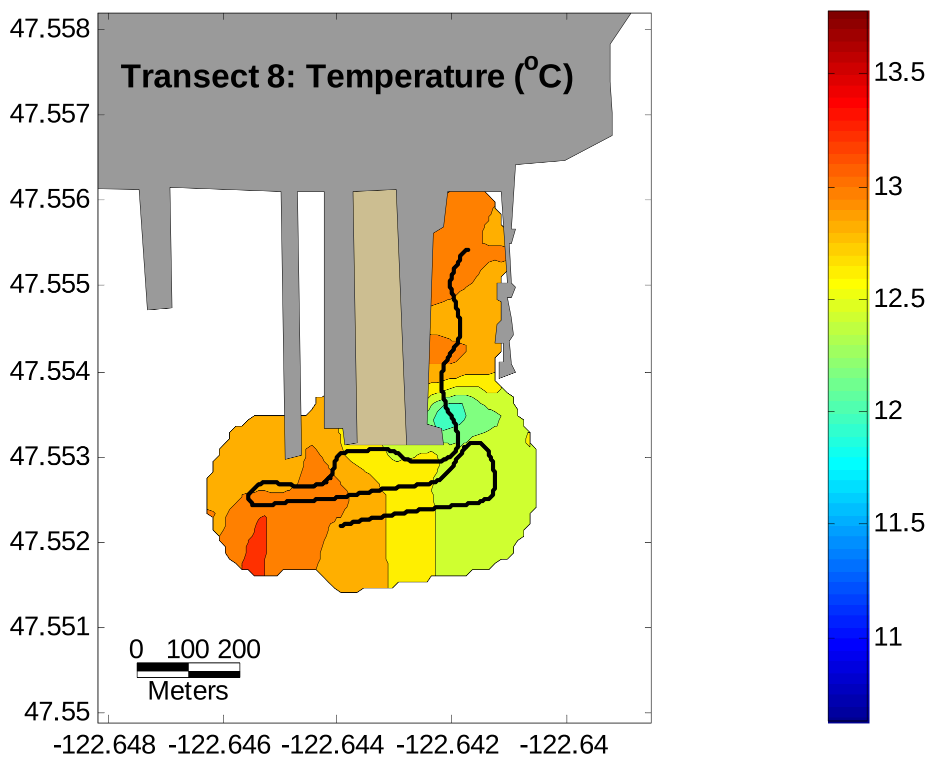
13
12.5
12
11.5
11


Transect 8: Temperature (°C)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
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-122.642
-122.64
0 100 200
Meters
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12.5
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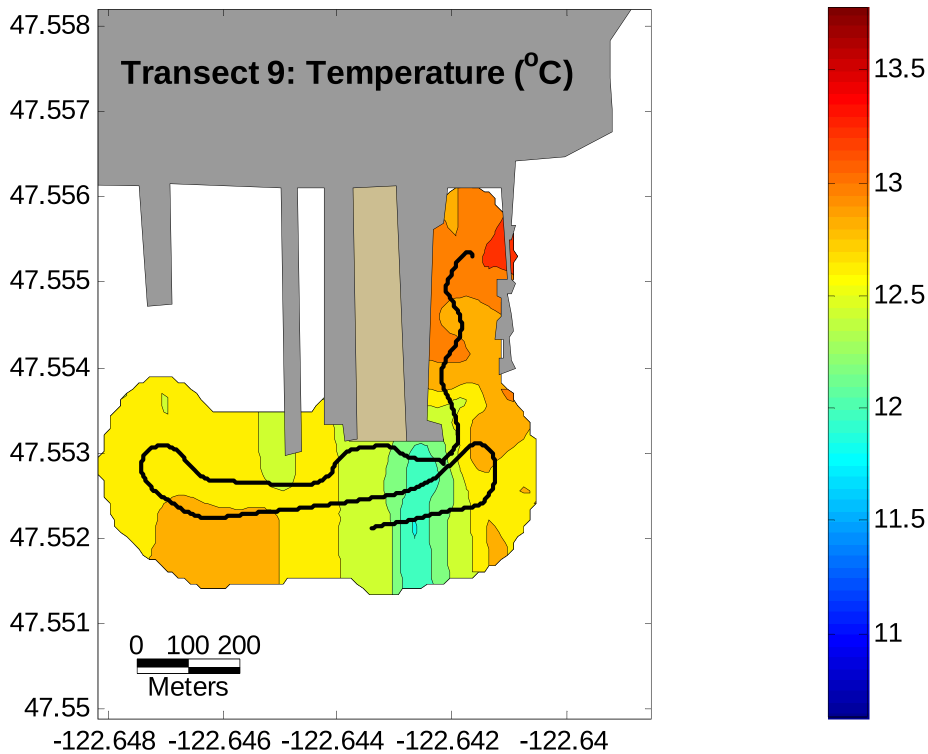
11.5
11


Transect 9: Temperature (^oC)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
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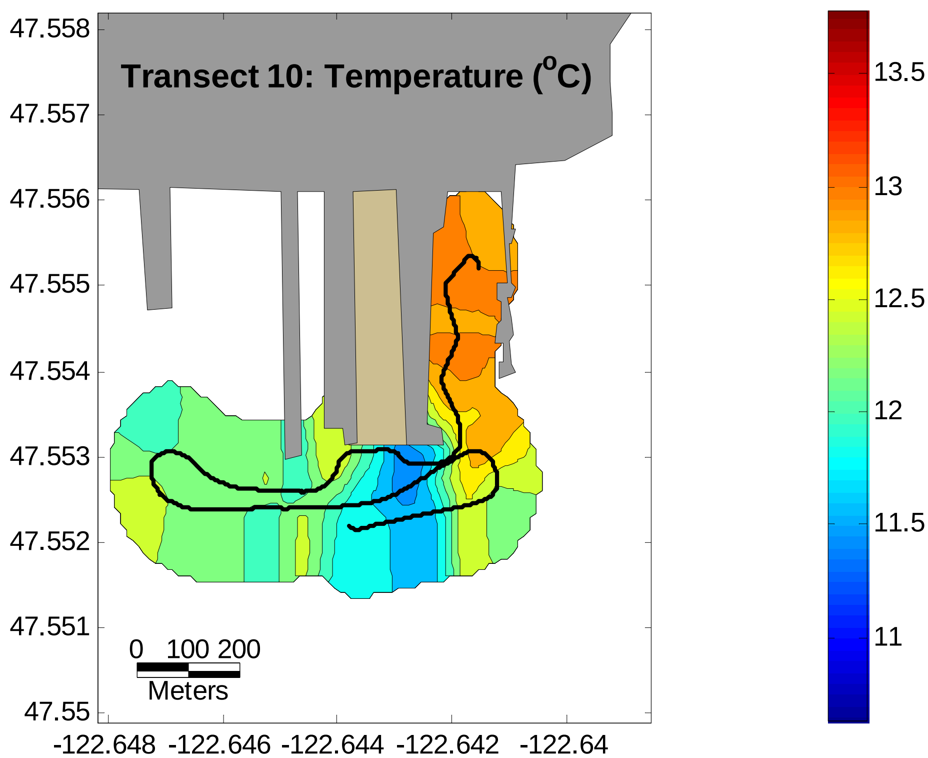
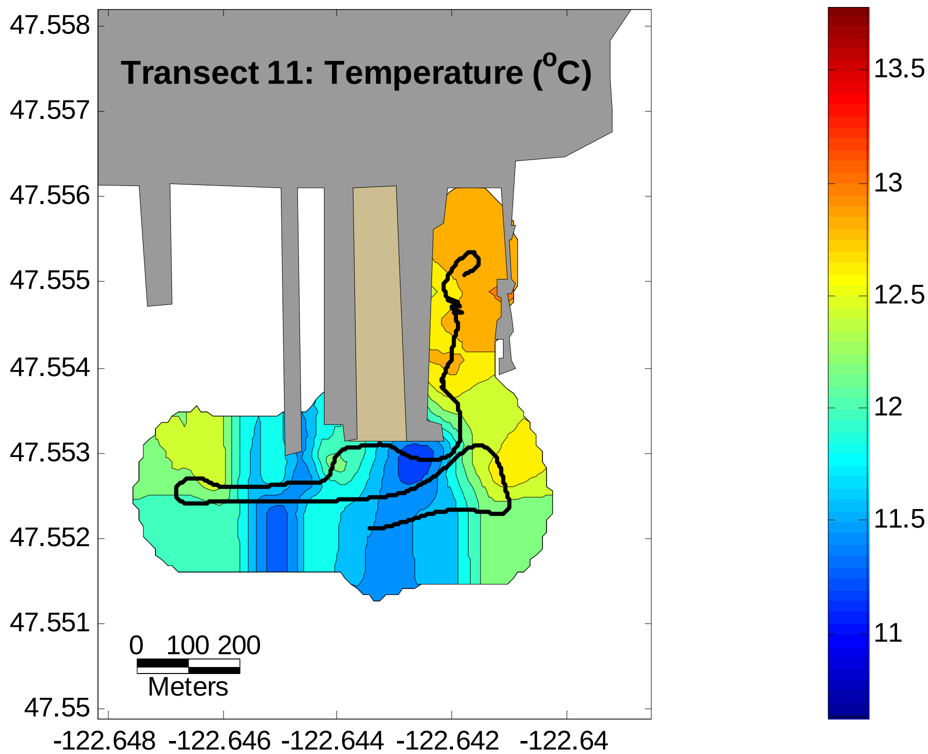
12.5
12
11.5
11


Transect 10: Temperature (^oC)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
13.5
13
12.5
12
11.5
11



Transect 11: Temperature (^{o}C)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
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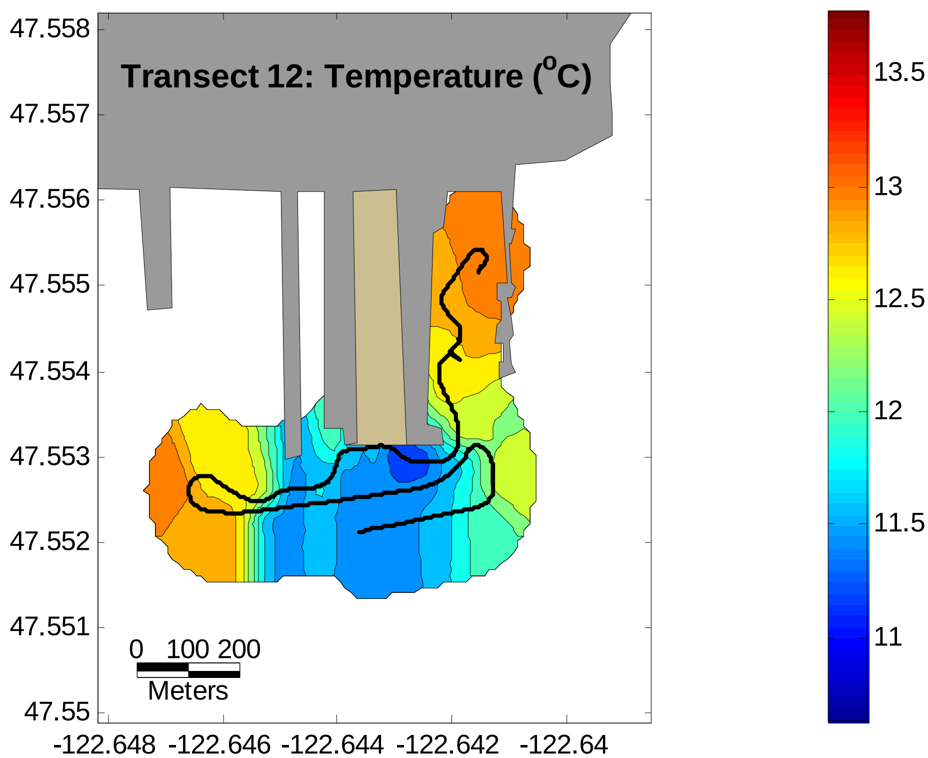
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
13.5
13
12.5
12
11.5
11



Transect 12: Temperature (^{o}C)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
13.5
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11.5
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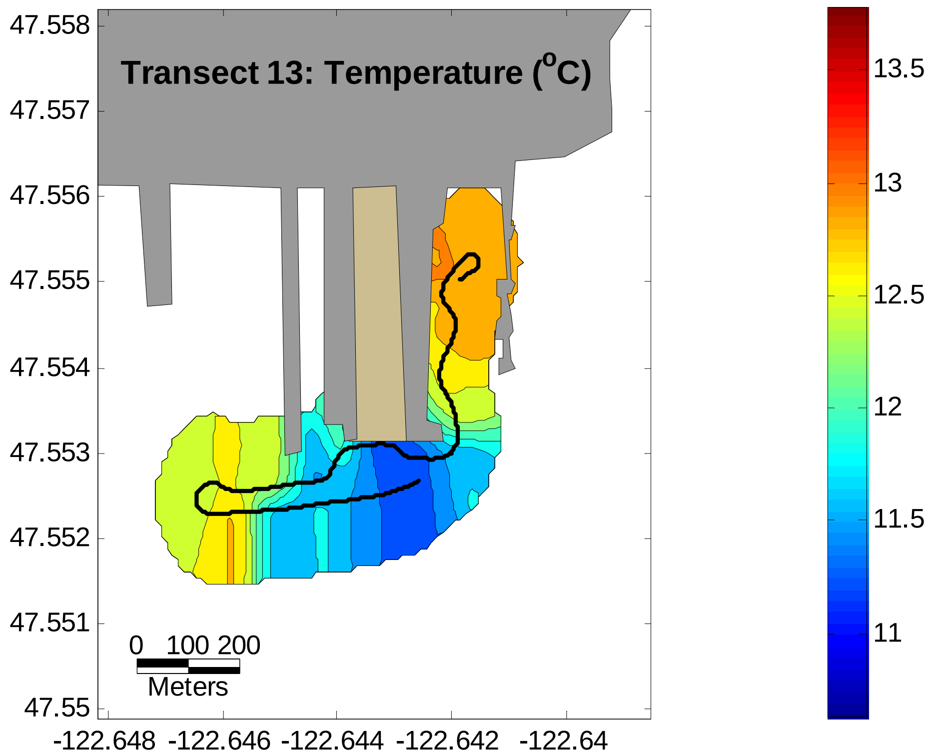
Transect 13: Temperature (°C)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
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-122.642
-122.64
0 100 200
Meters
13.5
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12.5
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11.5
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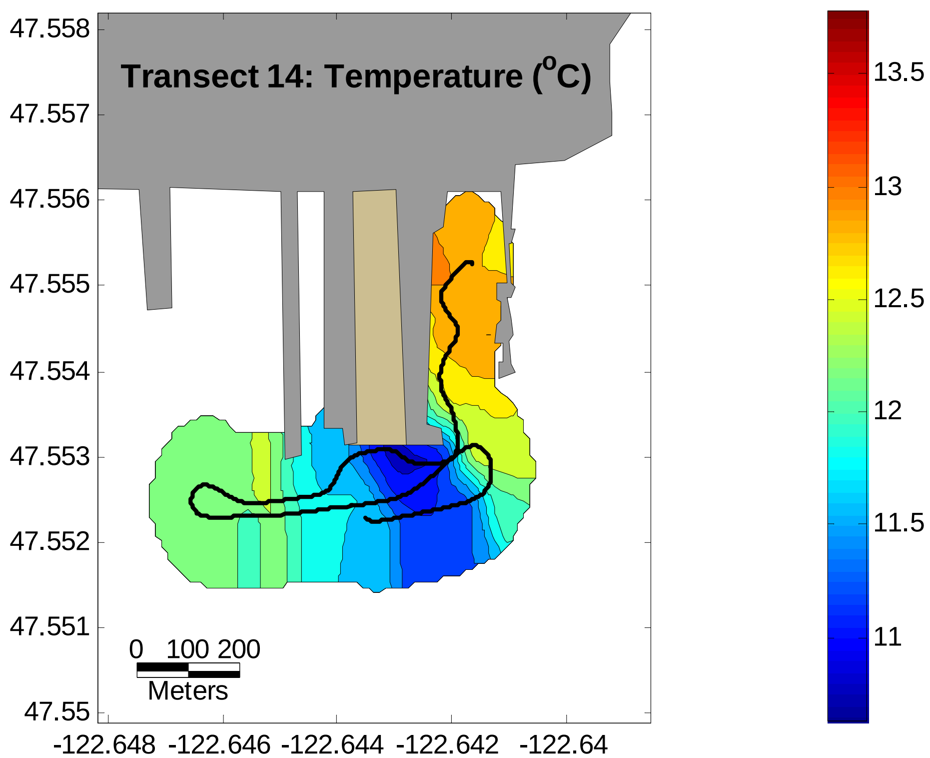
Transect 14: Temperature (°C)
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
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-122.642
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0 100 200
Meters
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12.5
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11.5
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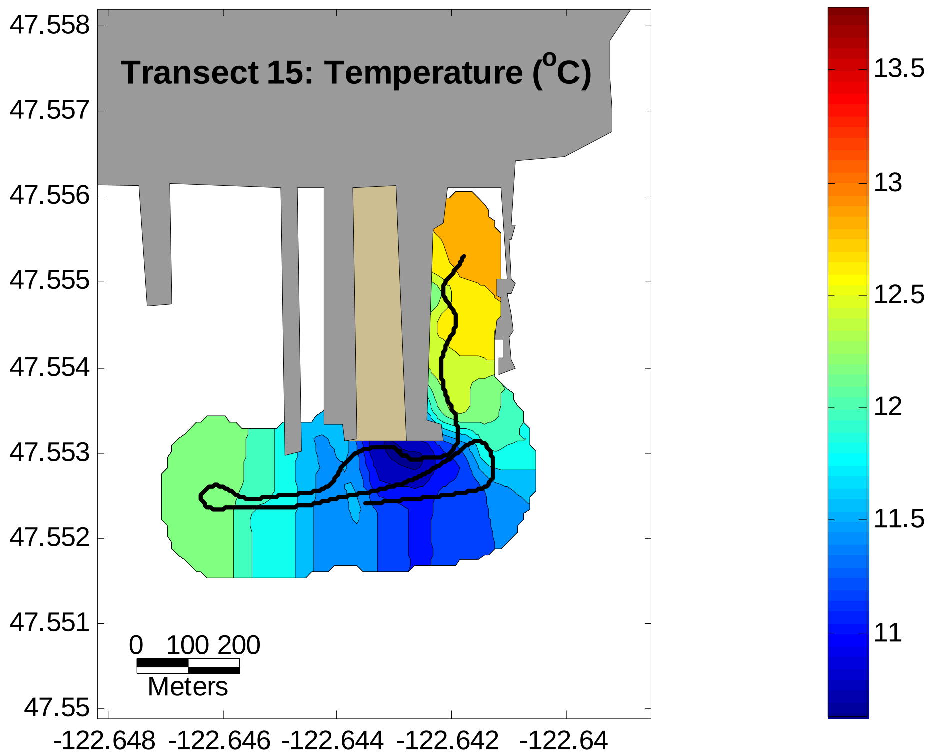

Transect 15: Temperature (^{o}C)
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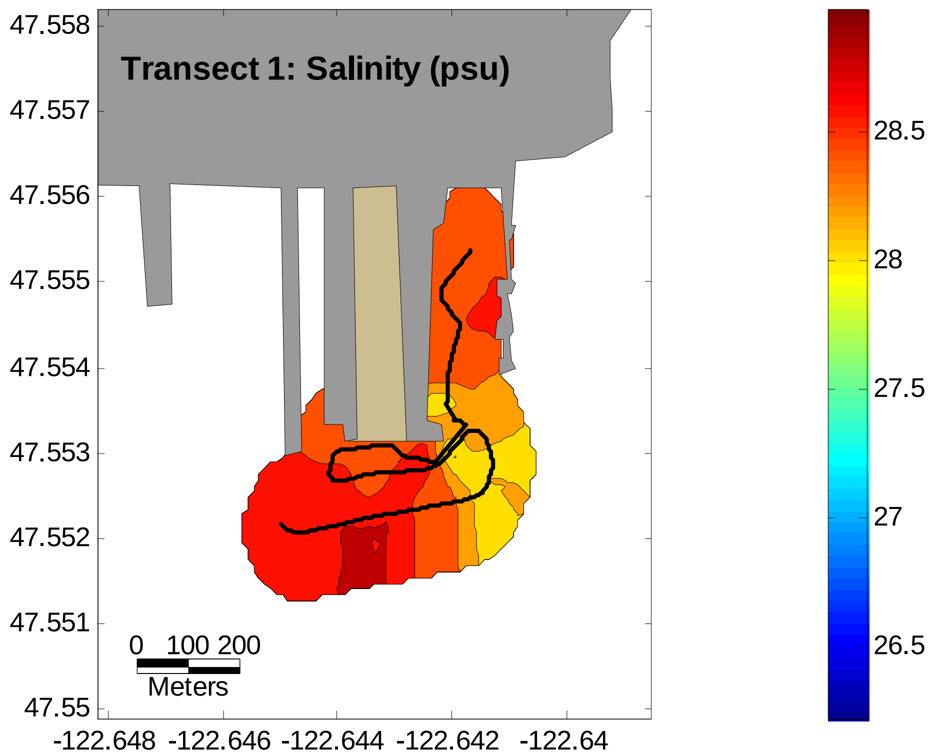
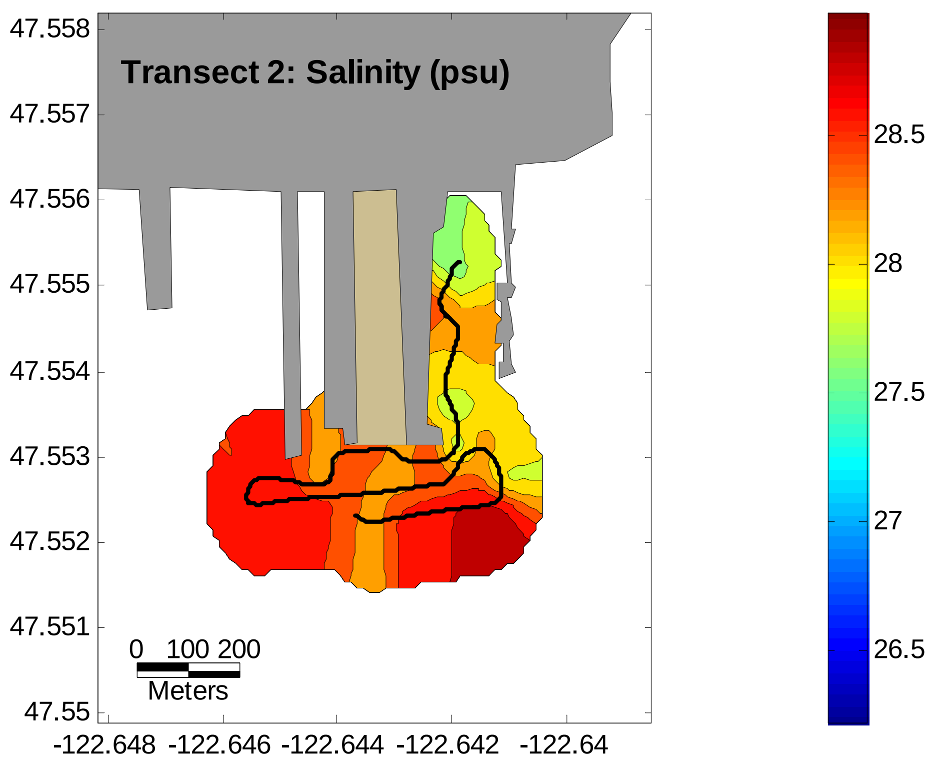
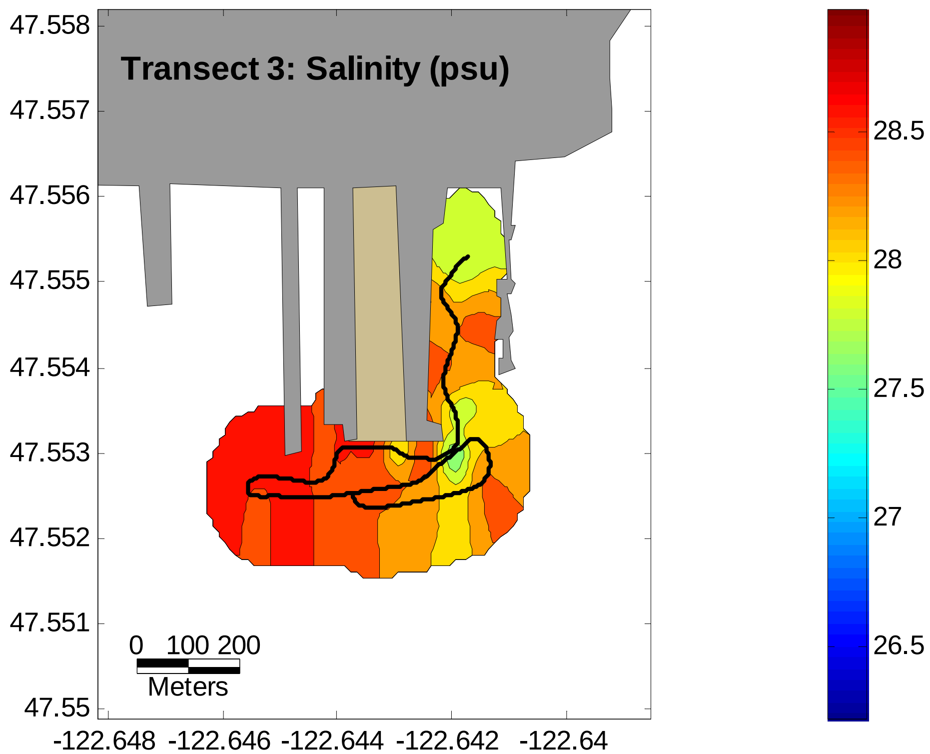
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648
-122.646
-122.644
-122.642
-122.64
0
100
200
Meters
13.5
13
12.5
12
11.5
11


Transect 1: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
28.5
28
27.5
27
26.5


Transect 2: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
0 100 200
Meters
-122.648 -122.646 -122.644 -122.642 -122.64
28.5
28
27.5
27
26.5


Transect 3: Salinity (psu)
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47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
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-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
28.5
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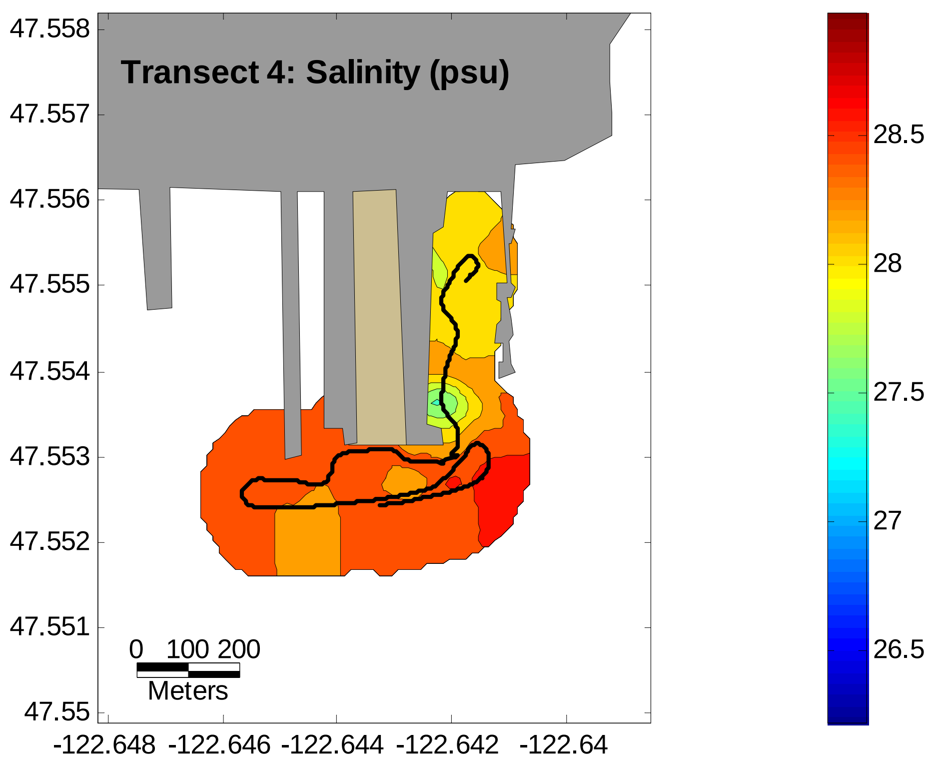
27.5
27
26.5


Transect 4: Salinity (psu)
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47.556
47.555
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47.552
47.551
47.55
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-122.644
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-122.64
0 100 200
Meters
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27.5
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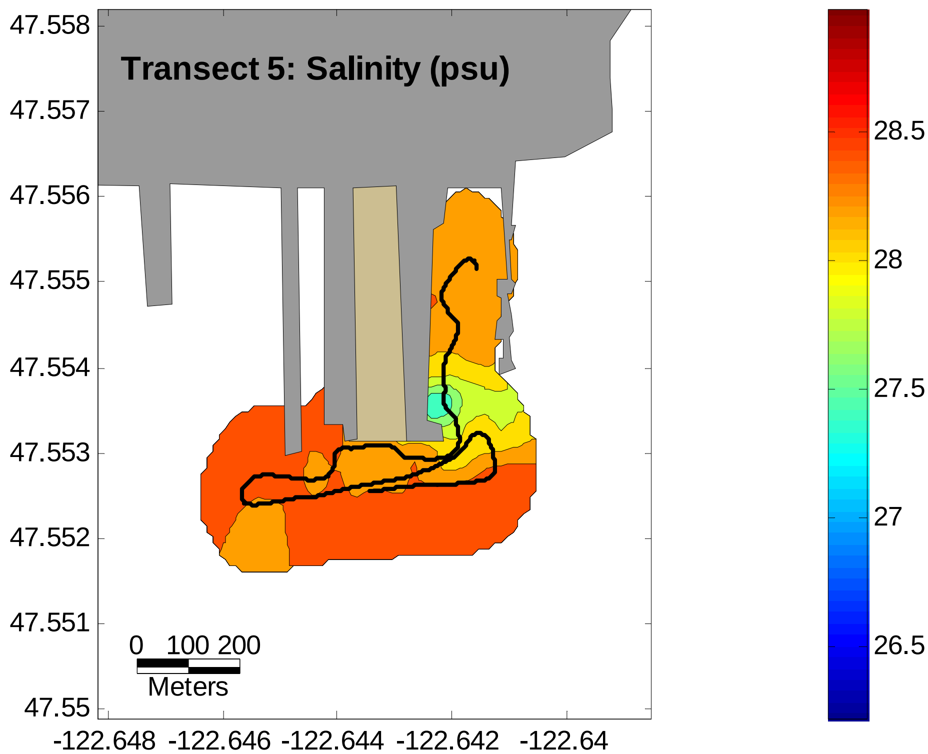
26.5


Transect 5: Salinity (psu)
47.558
47.557
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47.551
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0 100 200
Meters
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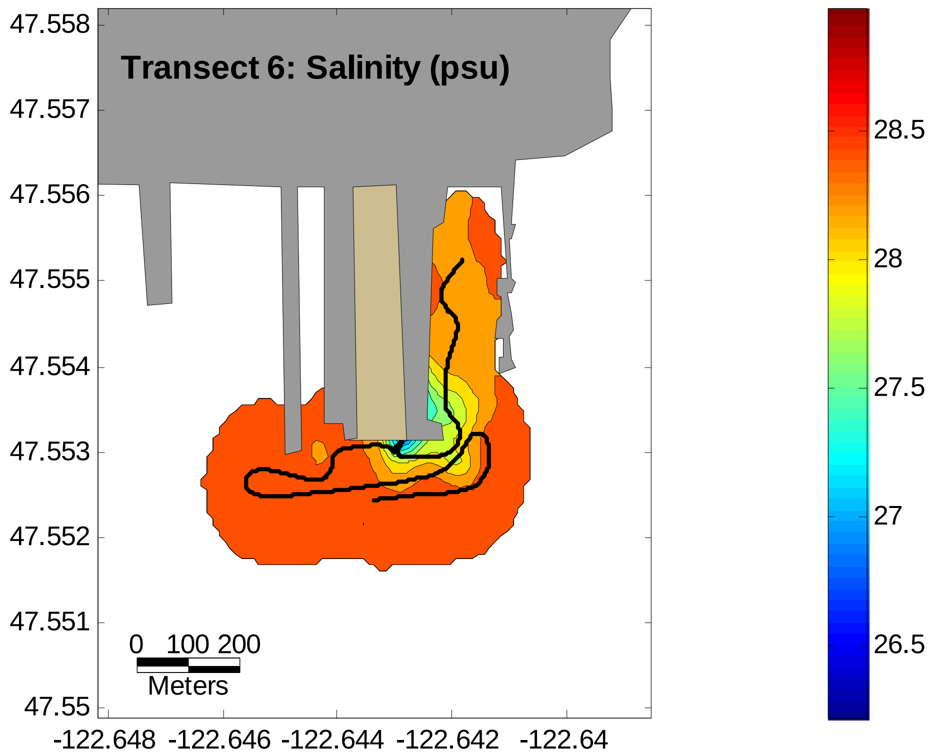
Transect 6: Salinity (psu)
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-122.642
-122.64
0 100 200
Meters
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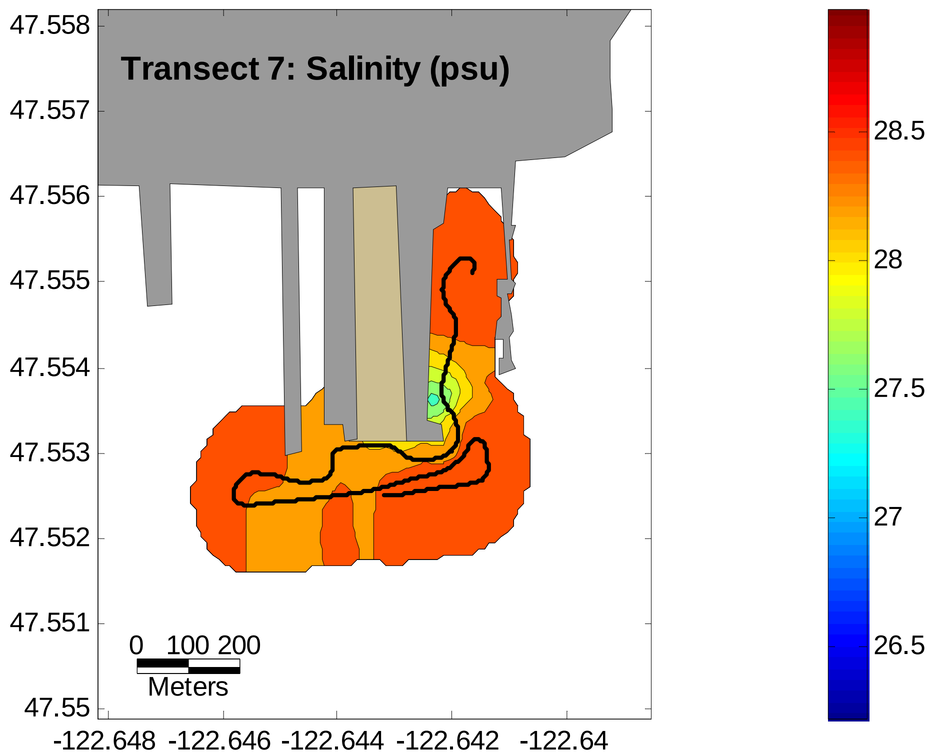
Transect 7: Salinity (psu)
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-122.644
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-122.64
0 100 200
Meters
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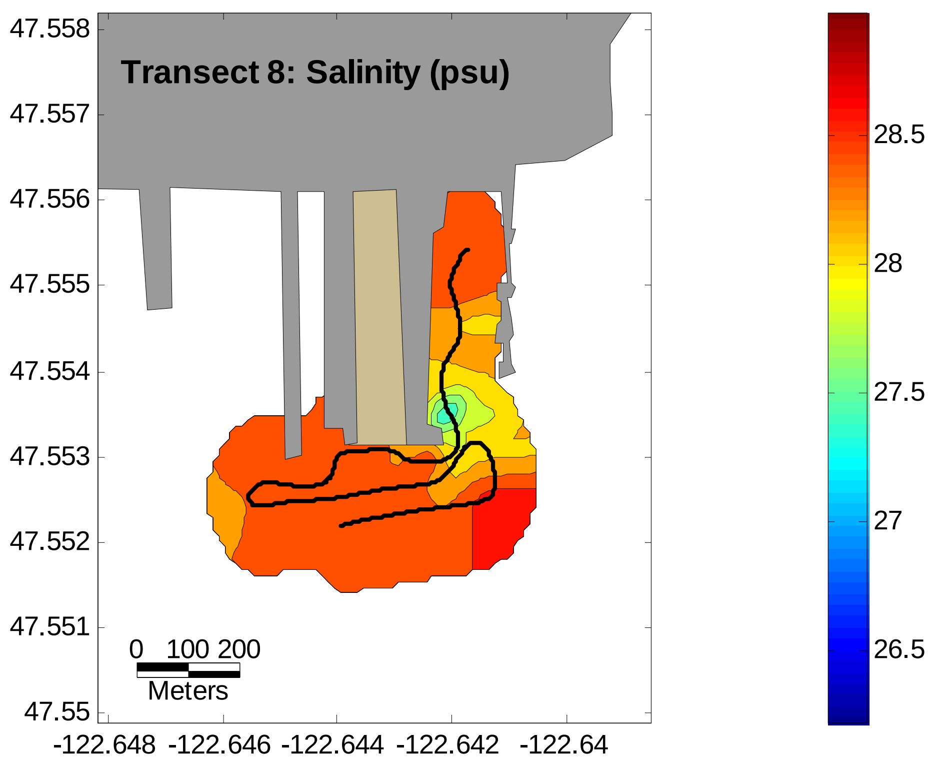
Transect 8: Salinity (psu)
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47.551
47.55
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-122.644
-122.642
-122.64
0 100 200
Meters
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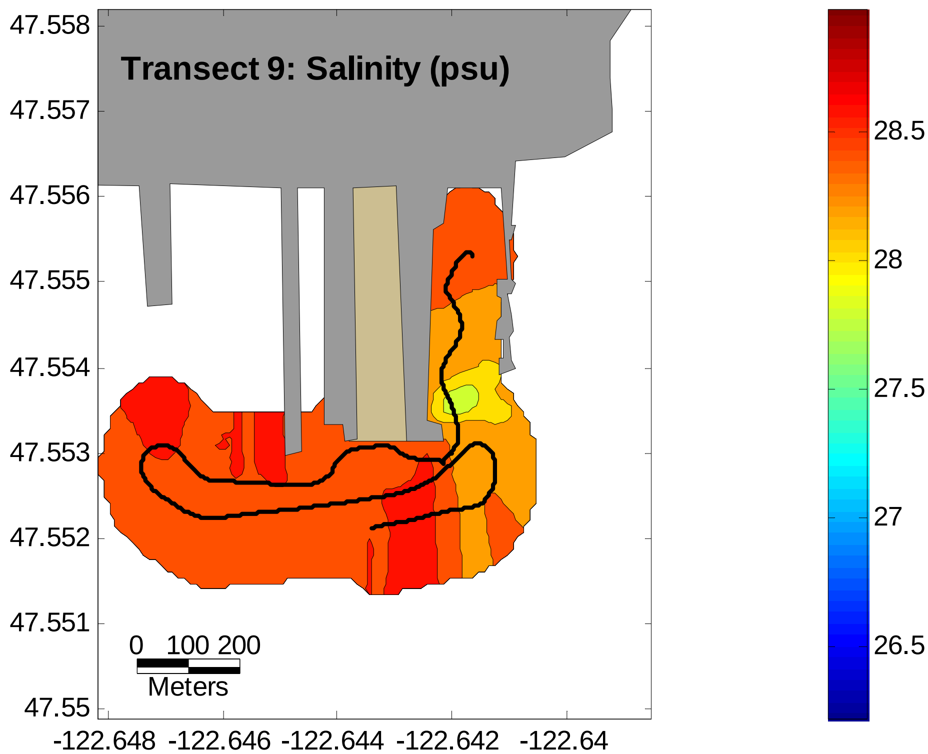
27.5
27
26.5


Transect 9: Salinity (psu)
47.558
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47.556
47.555
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-122.648
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-122.644
-122.642
-122.64
0 100 200
Meters
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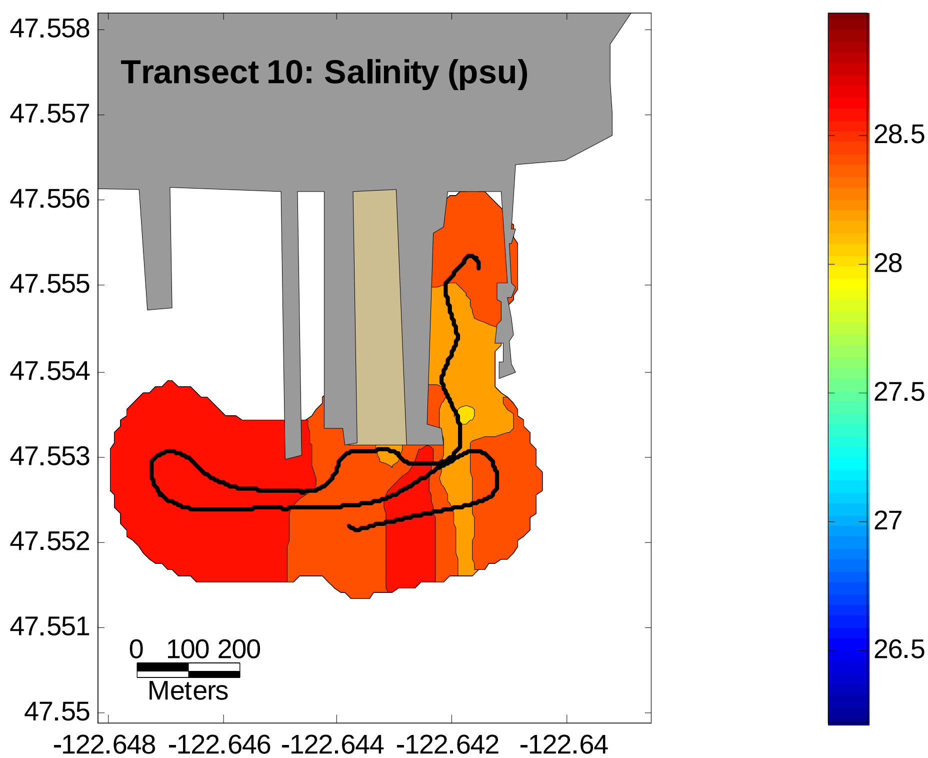
27.5
27
26.5


Transect 10: Salinity (psu)
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47.551
47.55
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-122.646
-122.644
-122.642
-122.64
0 100 200
Meters
28.5
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27.5
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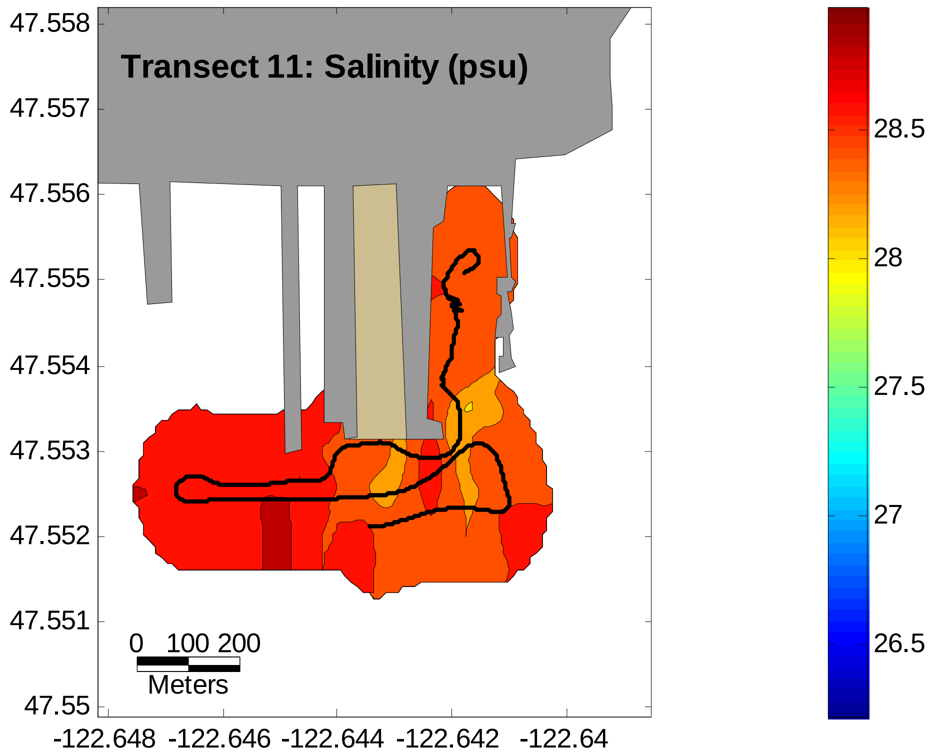
26.5


Transect 11: Salinity (psu)
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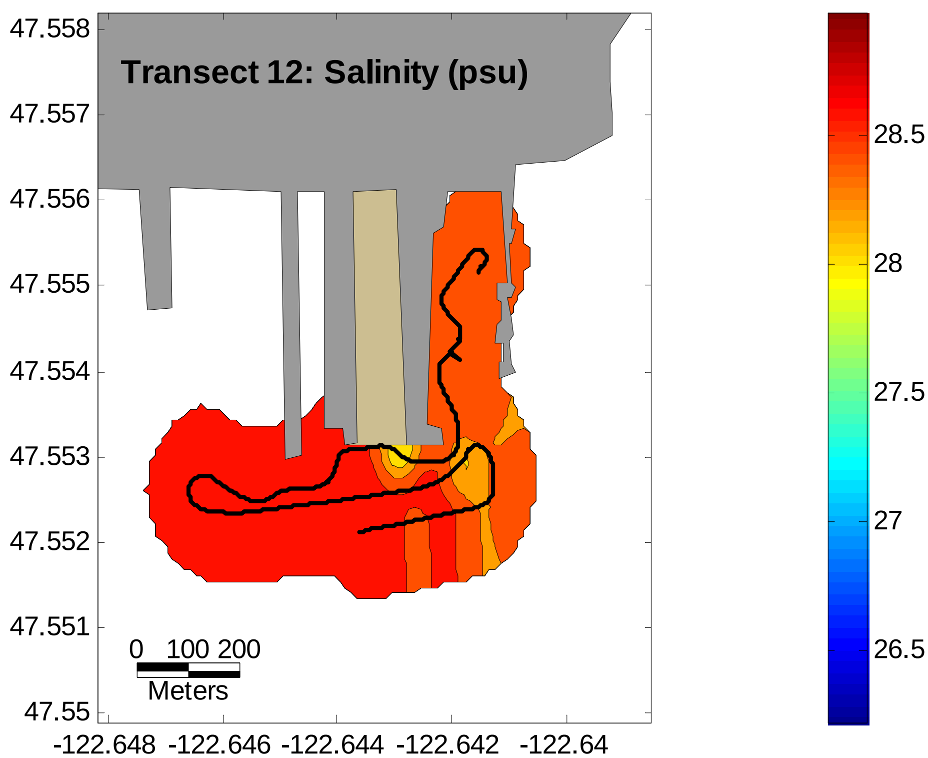
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
28.5
28
27.5
27
26.5


Transect 12: Salinity (psu)
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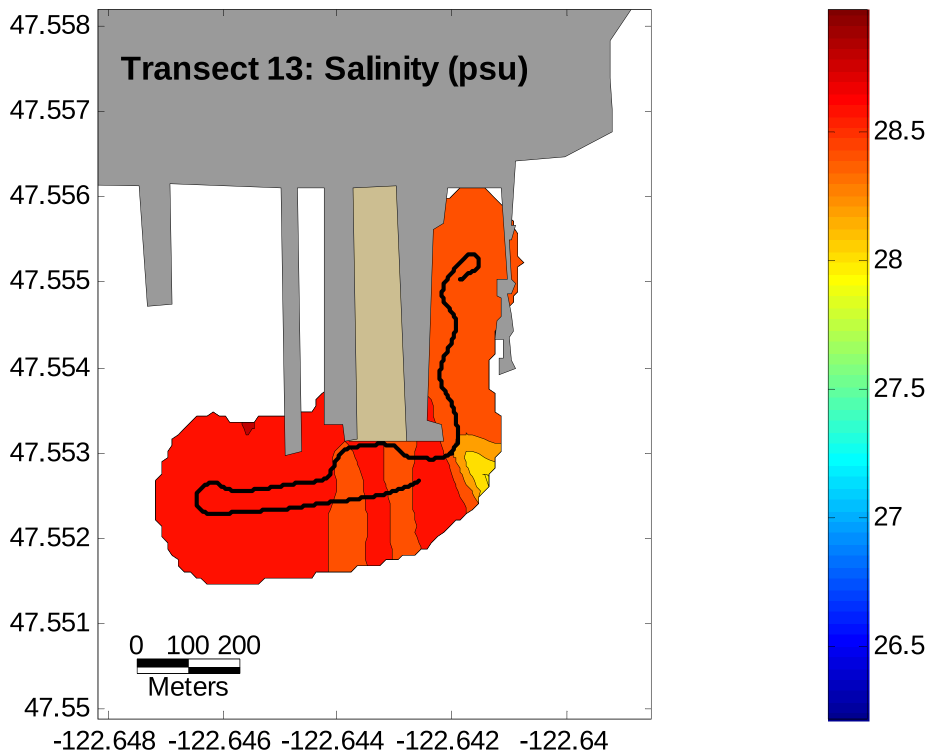
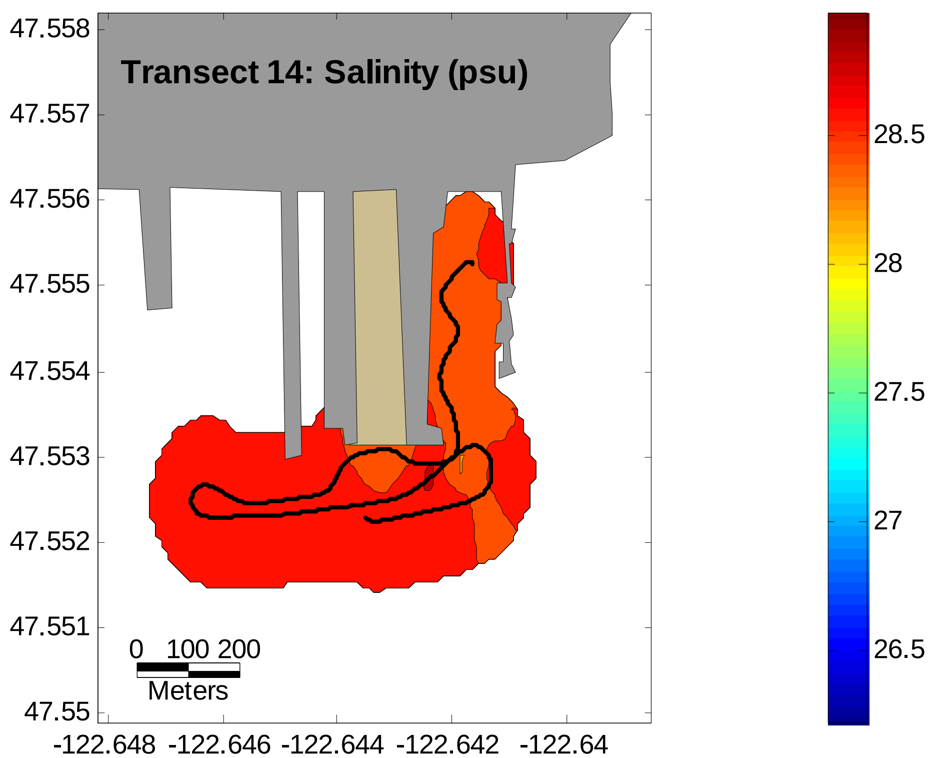
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
28.5
28
27.5
27
26.5


Transect 13: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
28.5
28
27.5
27
26.5


Transect 14: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
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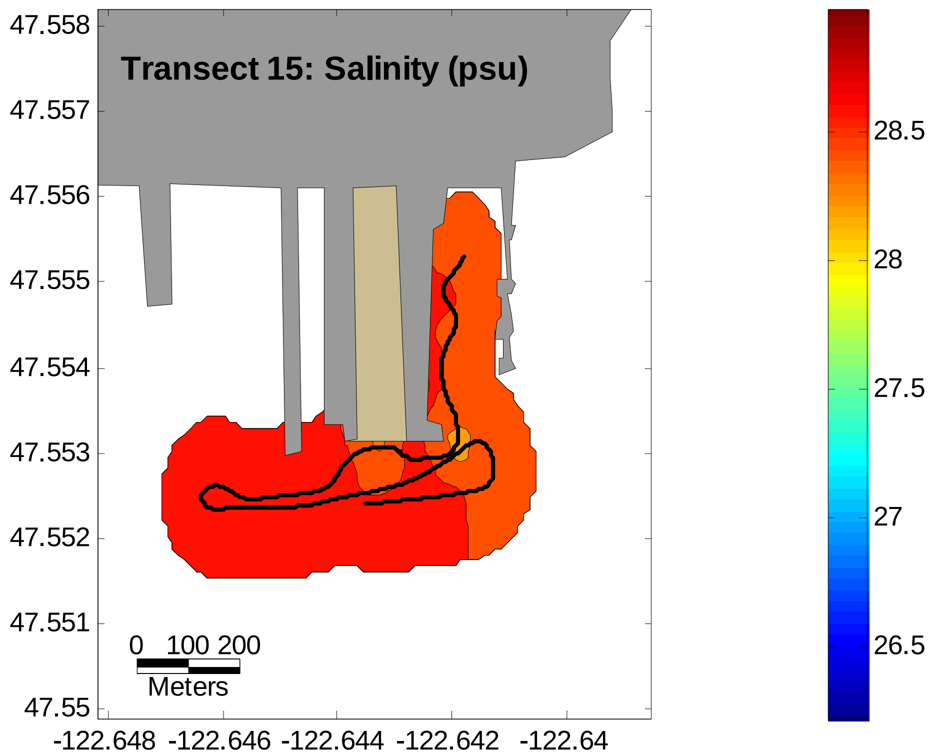
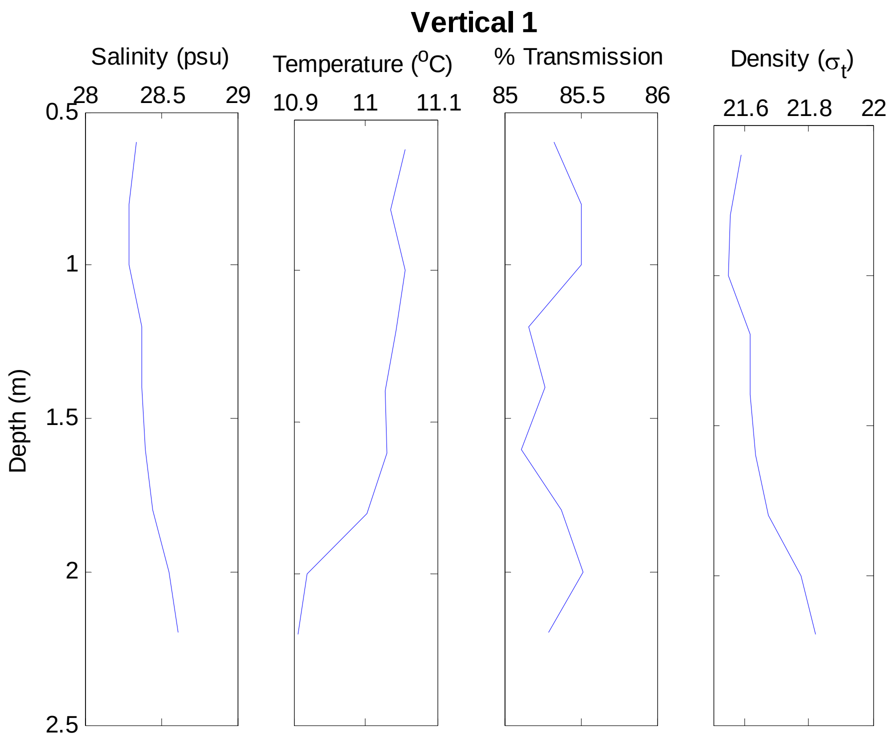
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
28.5
28
27.5
27
26.5



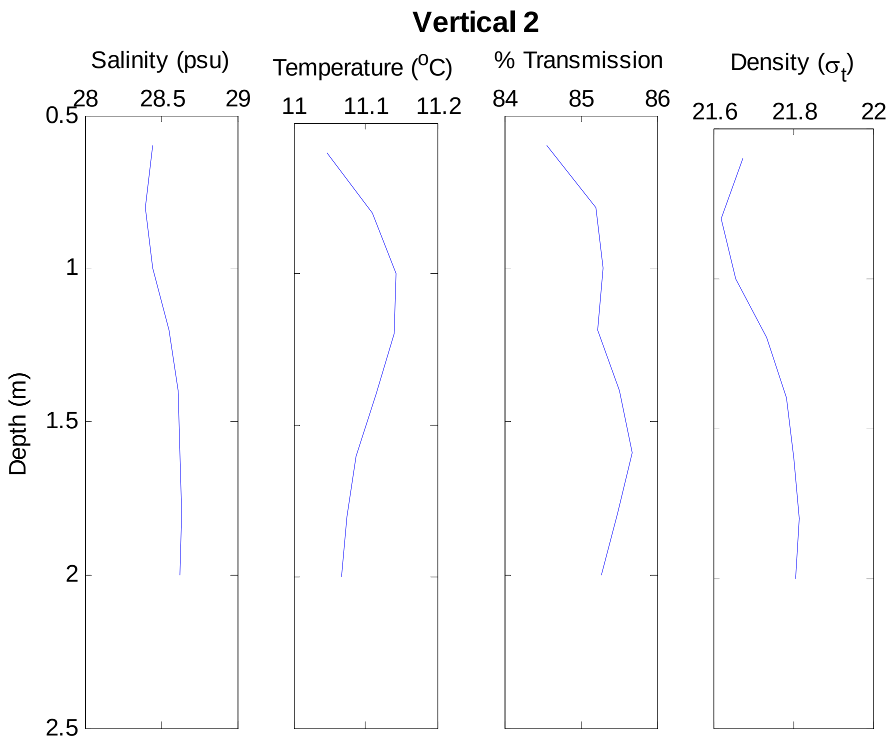
Transcect 15: Salinity (psu)
47.558
47.557
47.556
47.555
47.554
47.553
47.552
47.551
47.55
-122.648 -122.646 -122.644 -122.642 -122.64
0 100 200
Meters
28.5
28
27.5
27
26.5

APPENDIX C- RUN 2 VERTICAL PROFILE DATA

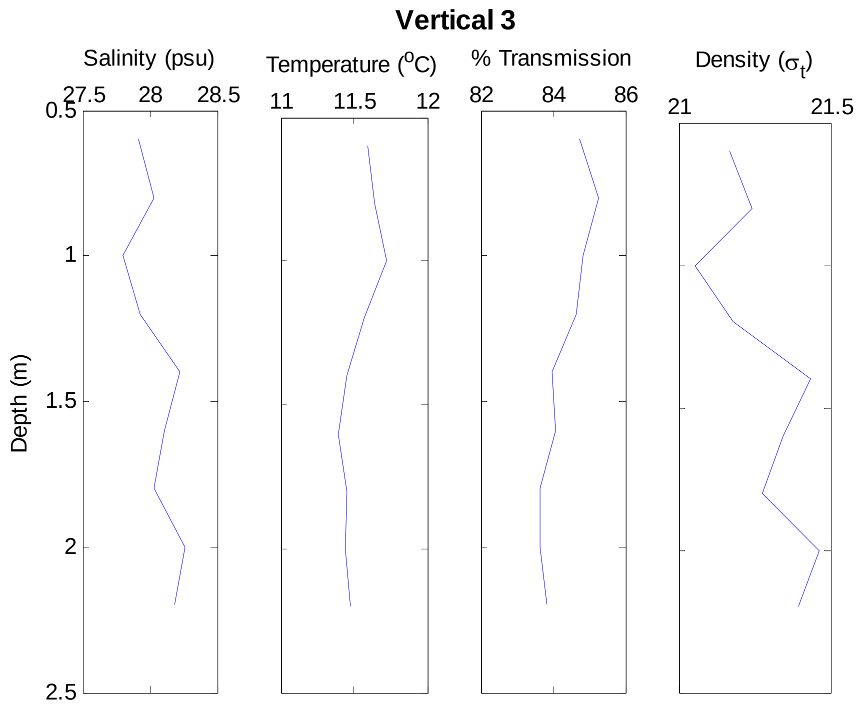
VERTICAL	Start	End	Tide (cm)
1	22.5818	22.5826	-18.3
2	22.5984	22.5991	-10.1
3	22.7210	22.7218	174.6

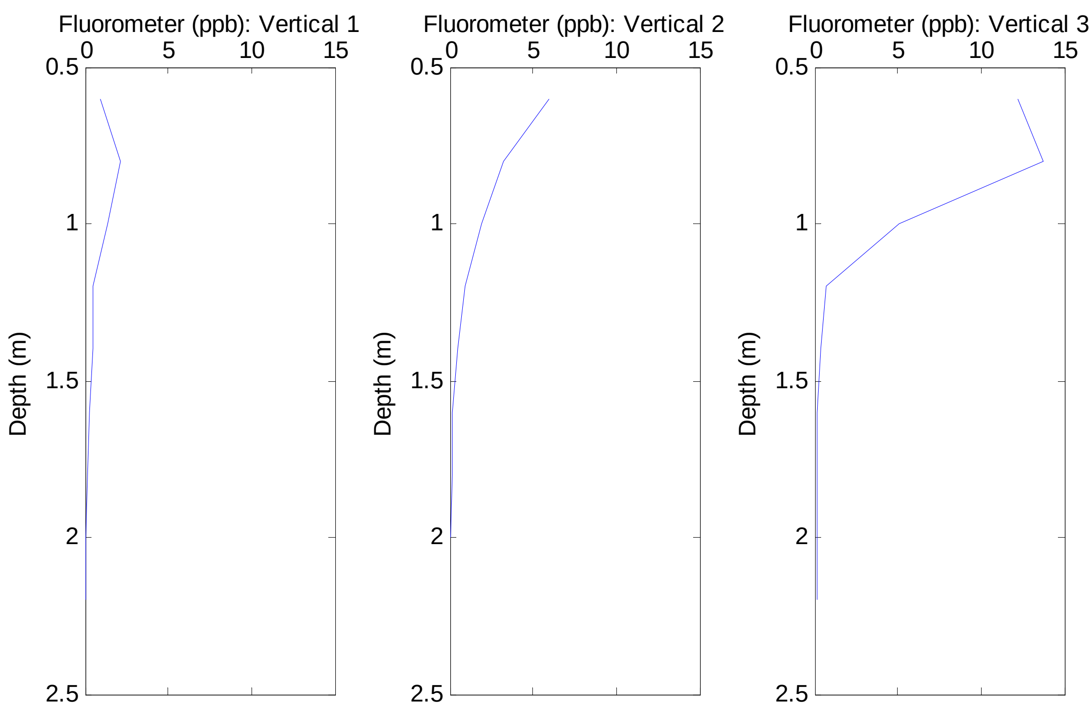


Vertical 1
Salinity (psu)
Temperature (°C)
% Transmission
Density (σt)
28
28.5
29
10.9
11
11.1
85
85.5
86
21.6
21.8
22
0.5
1
1.5
2
2.5
Depth (m)



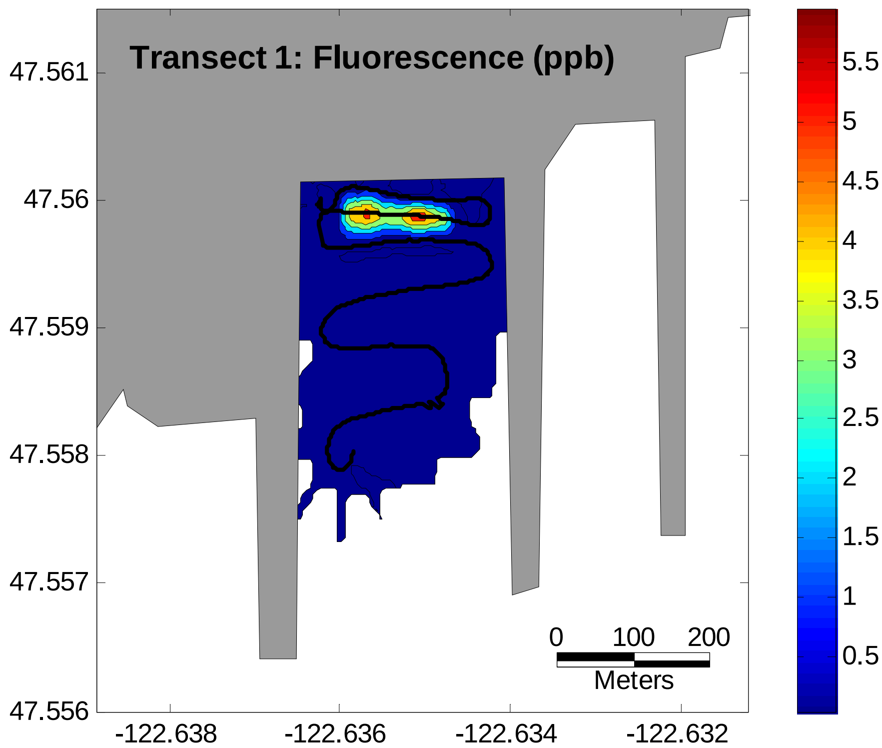
Vertical 2
Salinity (psu)
Temperature (°C)
% Transmission
Density (σt)
28
28.5
29
11
11.1
11.2
84
85
86
21.6
21.8
22
0.5
1
1.5
2
2.5
Depth (m)

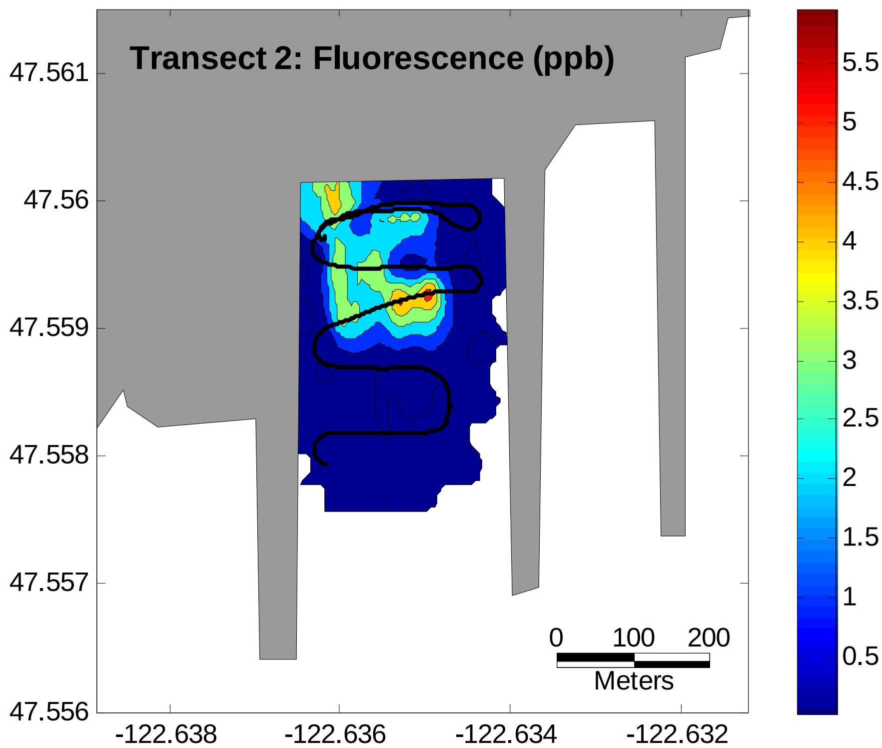

Vertical 3
Salinity (psu)
Temperature (oC)
% Transmission
Density (σt)
27.5 28 28.5
11 11.5 12
82 84 86
21 21.5
0.5
1
1.5
2
2.5
Depth (m)

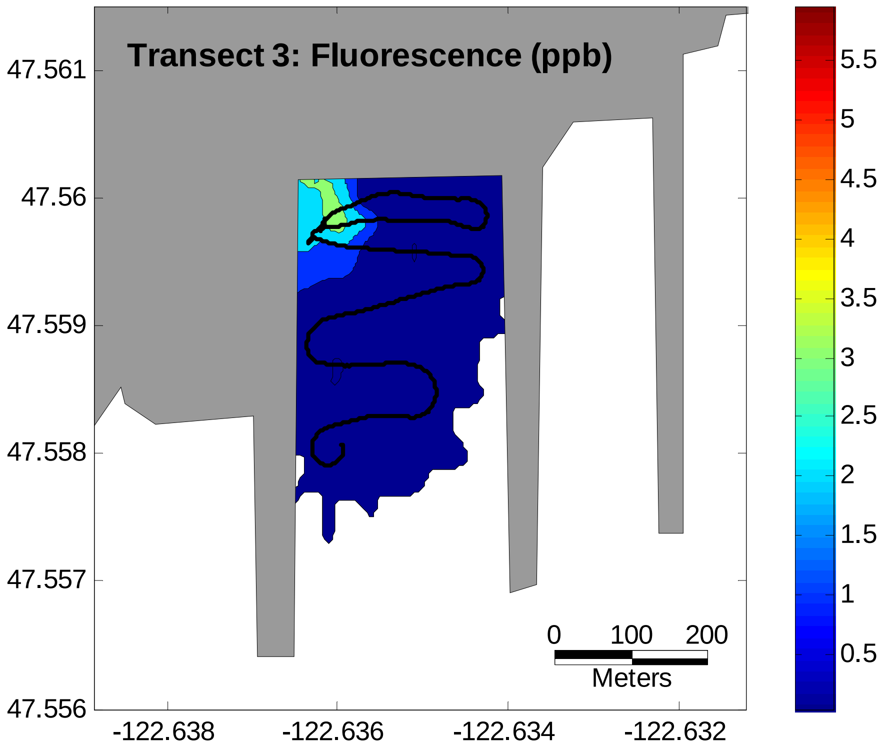

Fluorometer (ppb): Vertical 1
Fluorometer (ppb): Vertical 2
Fluorometer (ppb): Vertical 3
0 5 10 15
0.5
1
1.5
2
2.5
Depth (m)

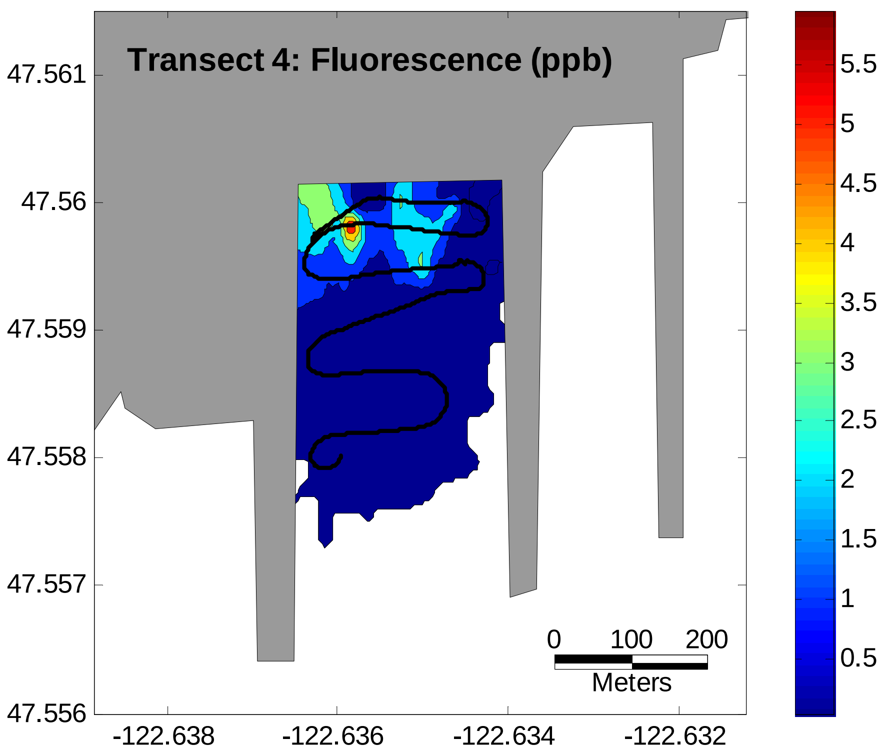
APPENDIX D- RUN 3 TRANSECT DATA

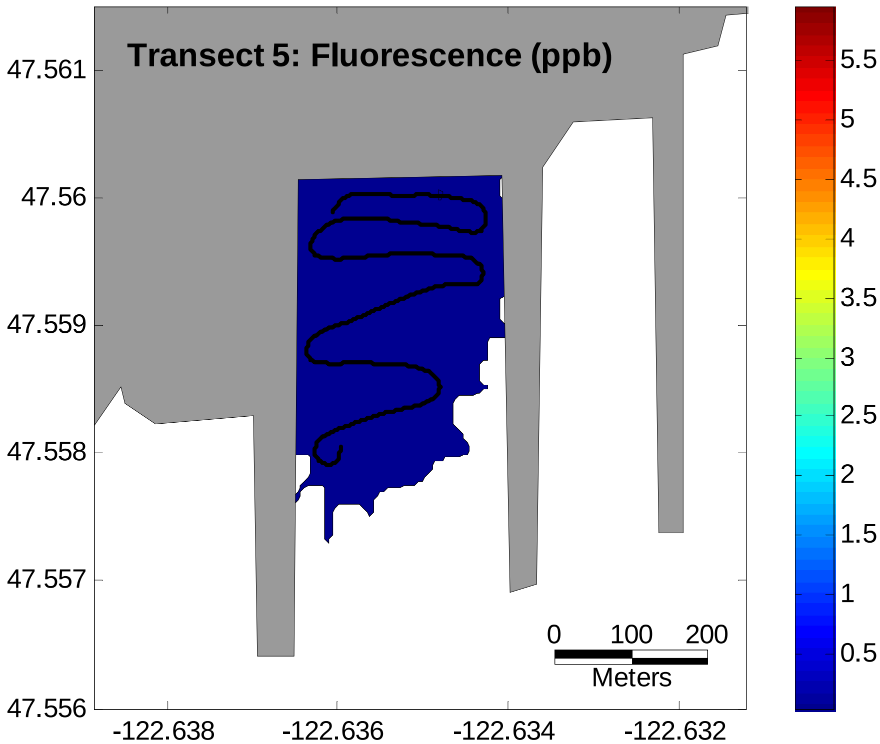
TRANSECT	Start	End	Tide (cm)
1	26.3705	26.3822	265.2
2	26.3913	26.4007	262.1
3	26.4054	26.4183	259.1
4	26.4278	26.4401	249.5
5	26.4425	26.4537	239.1
6	26.4637	26.4748	223.7
7	26.4778	26.4949	208.1
8	26.4984	26.5078	192.8
9	26.5284	26.5396	158.0
10	26.5420	26.5537	141.8
11	26.5561	26.5679	125.7
12	26.5808	26.5973	95.3
13	26.6091	26.6239	64.3
14	26.6485	26.6591	33.8
15	26.6761	26.6868	21.3
16	26.6891	26.7016	18.3
17	26.7073	26.7209	21.3
18	26.7236	26.7392	27.4

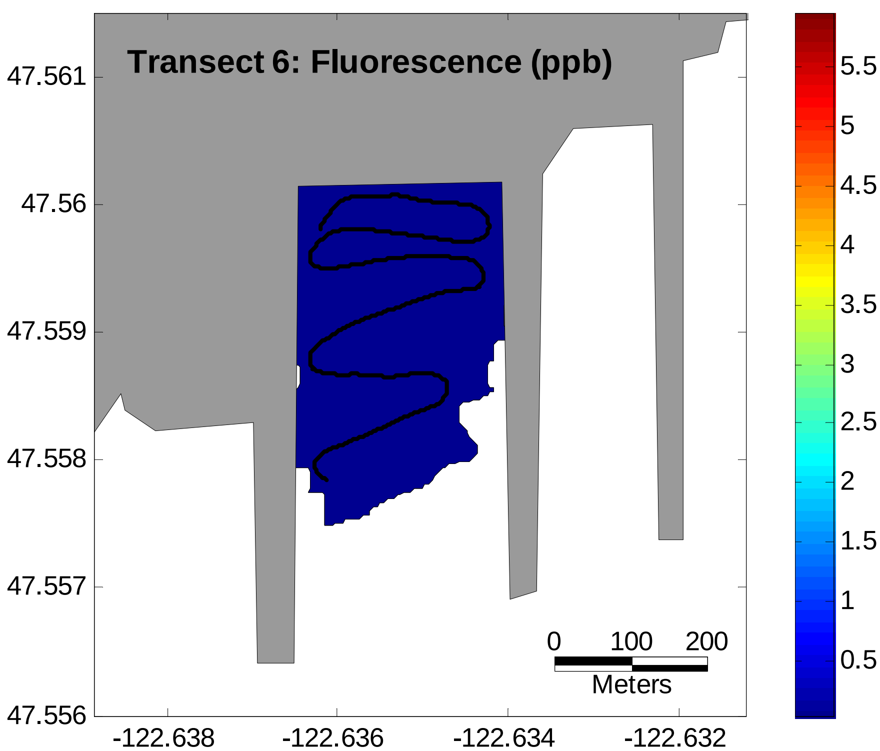

Transcect 1: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

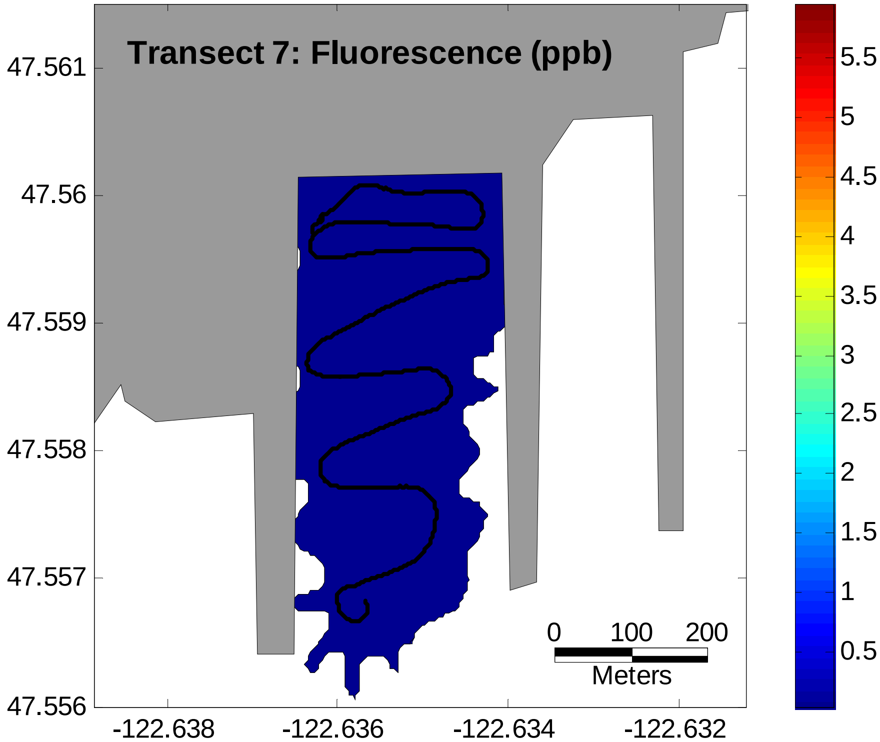

Transect 2: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

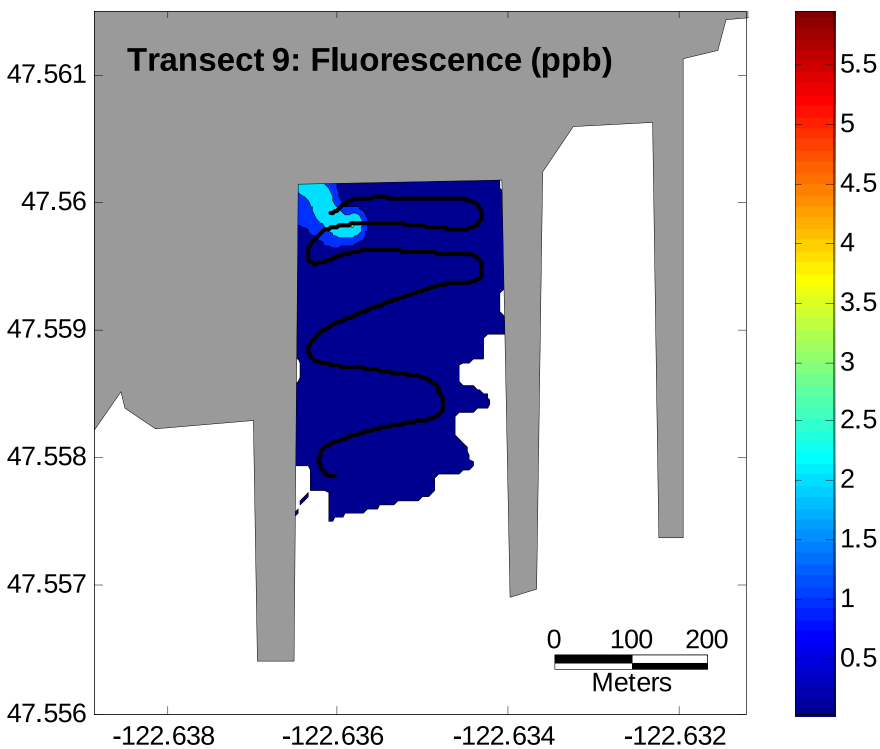

Transect 3: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

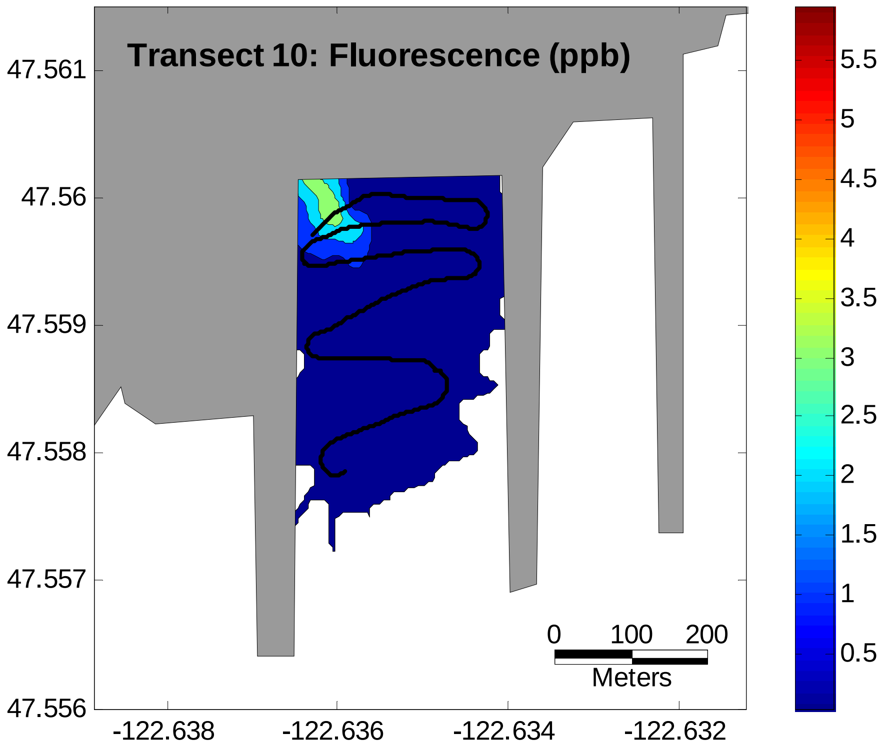

Transect 4: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 5: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

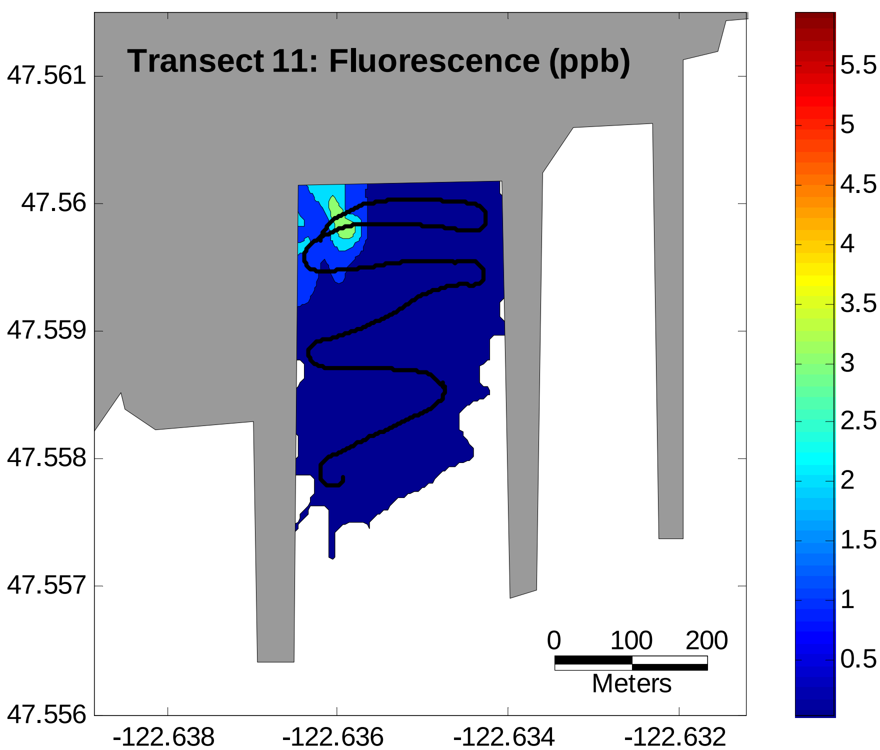

Transect 6: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transcect 7: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

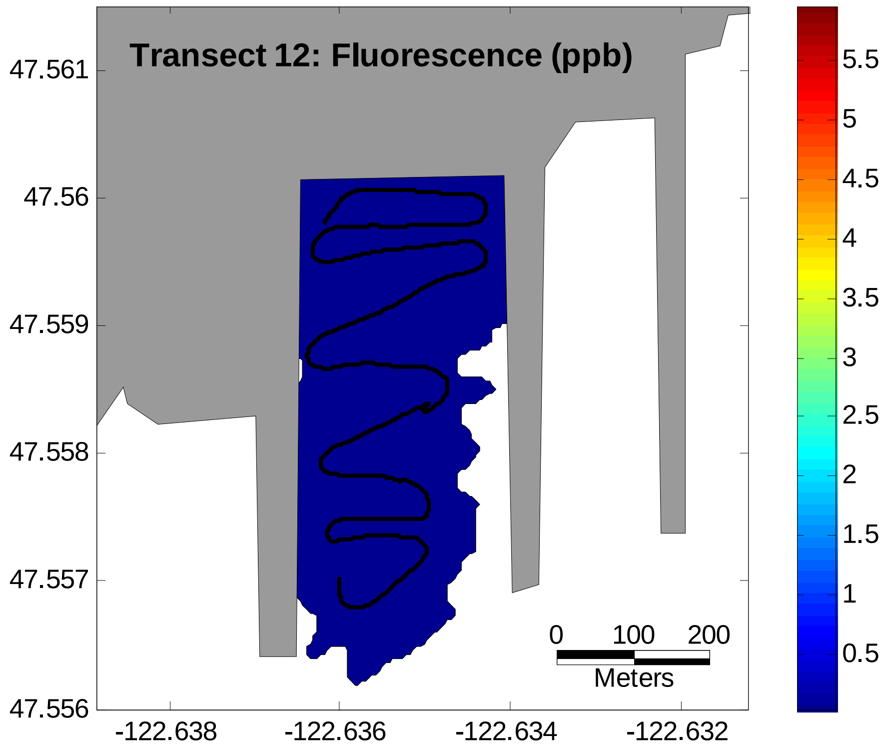

Transect 9: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

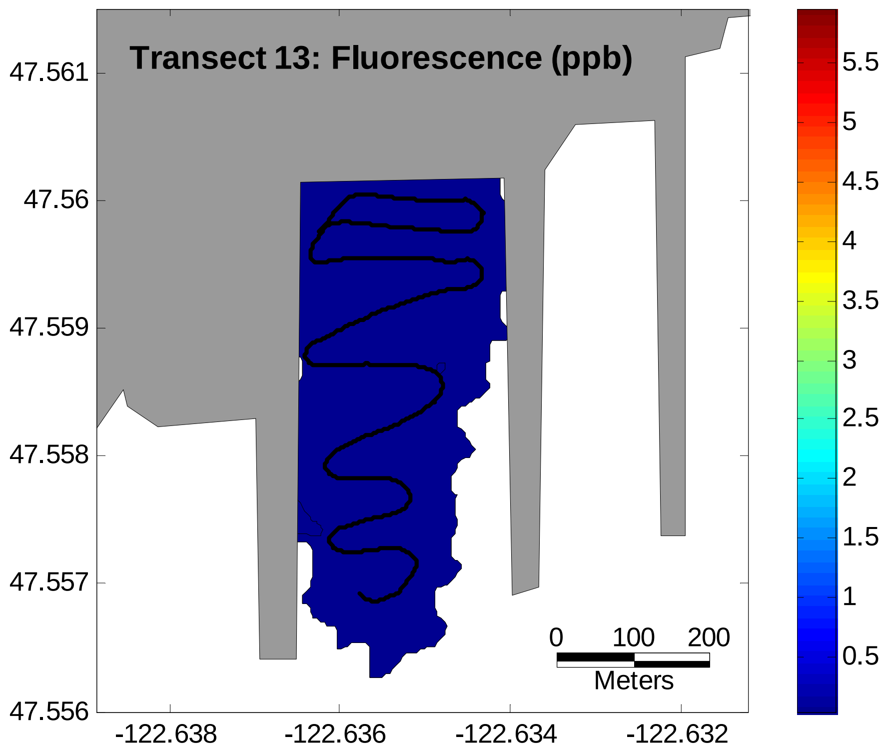


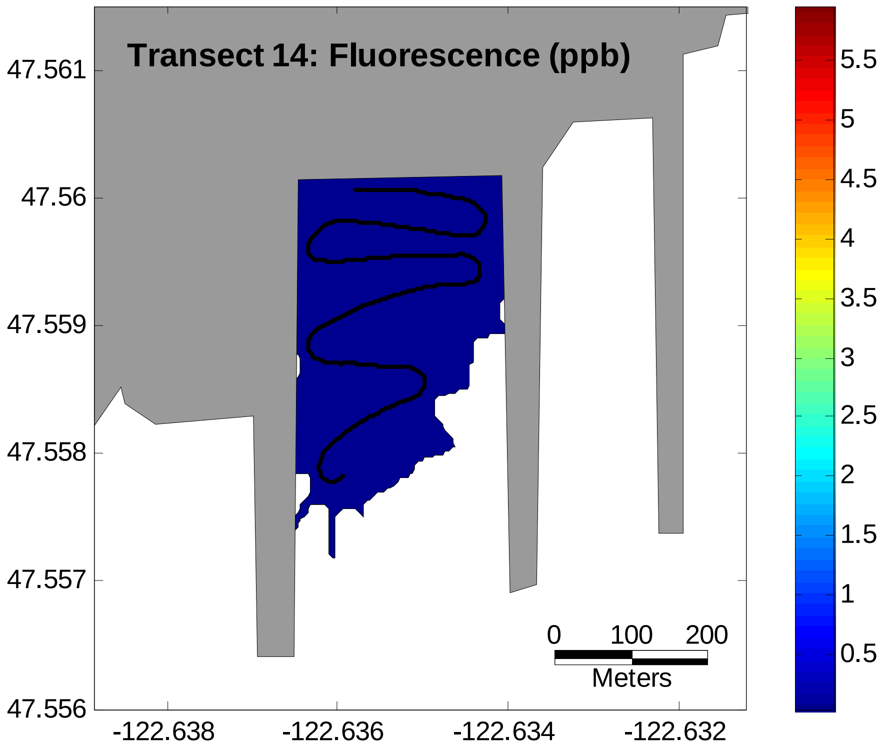
Transect 10: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

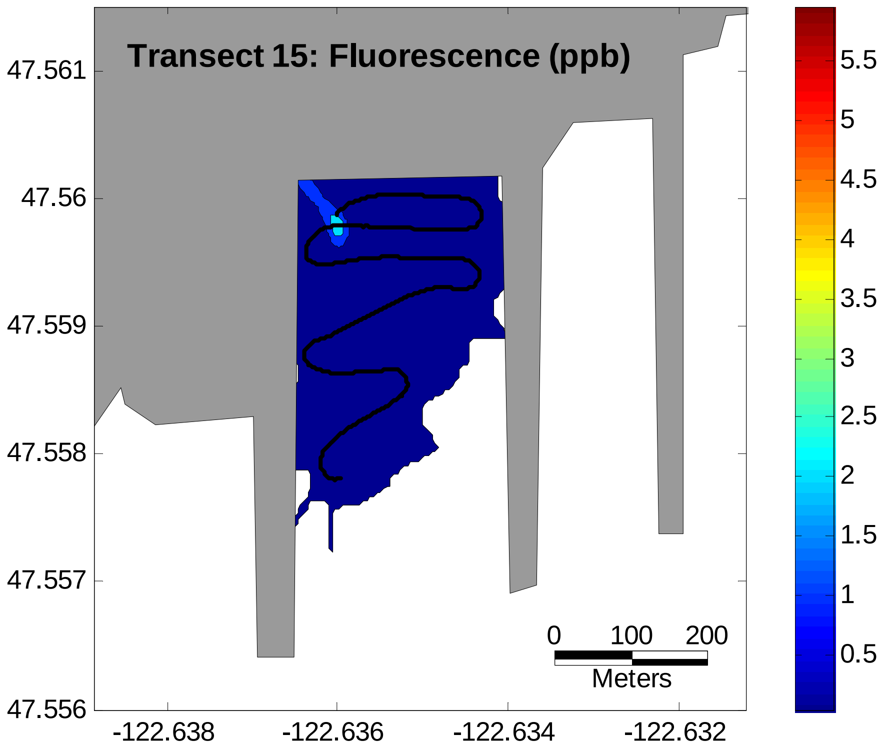


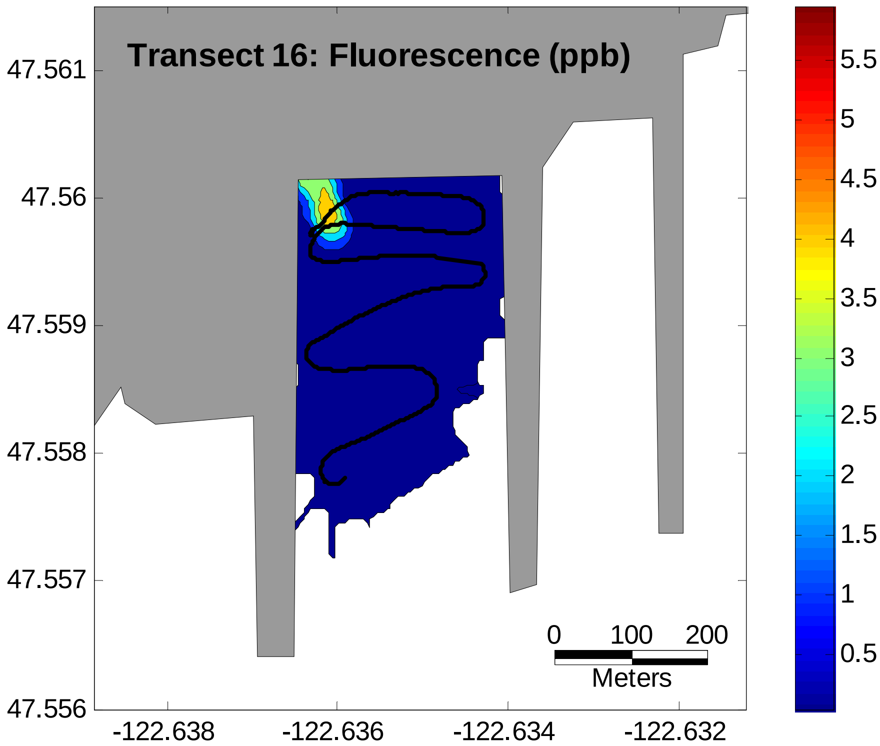
Transect 11: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

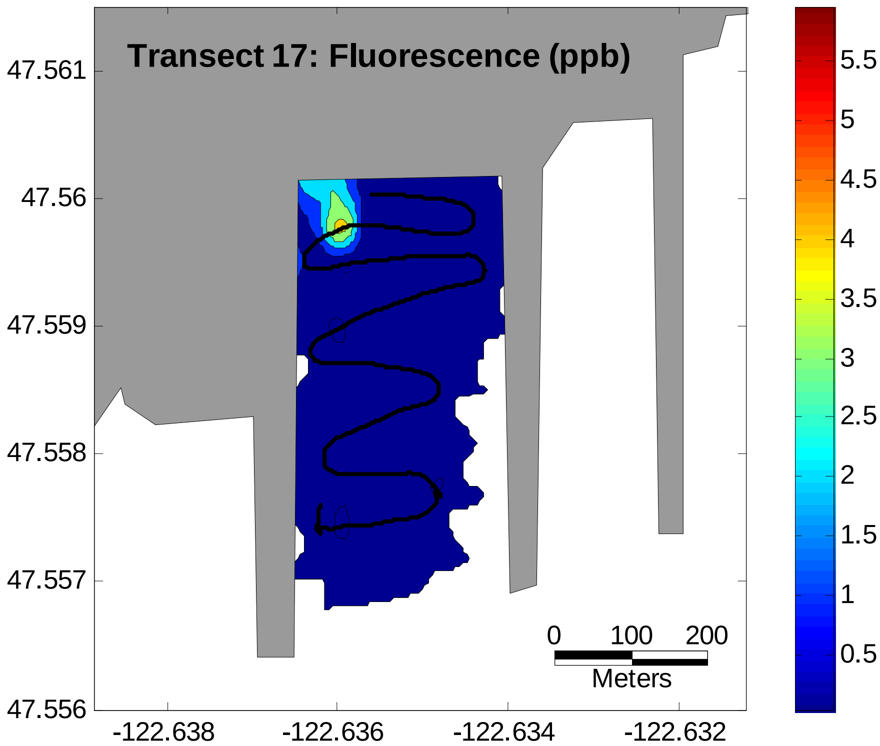

Transect 12: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

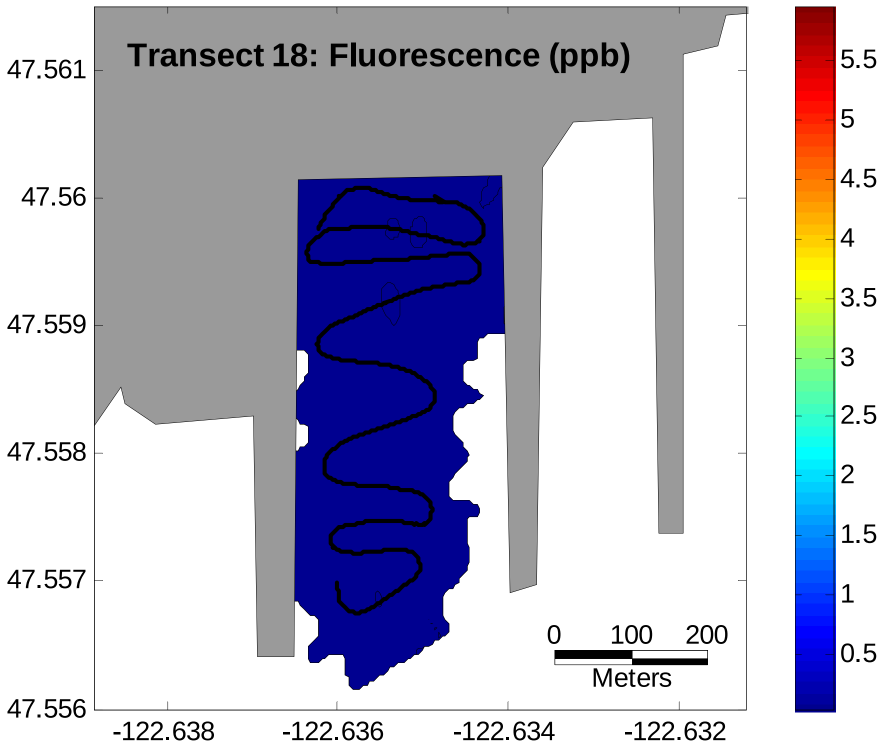

Transect 13: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 14: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

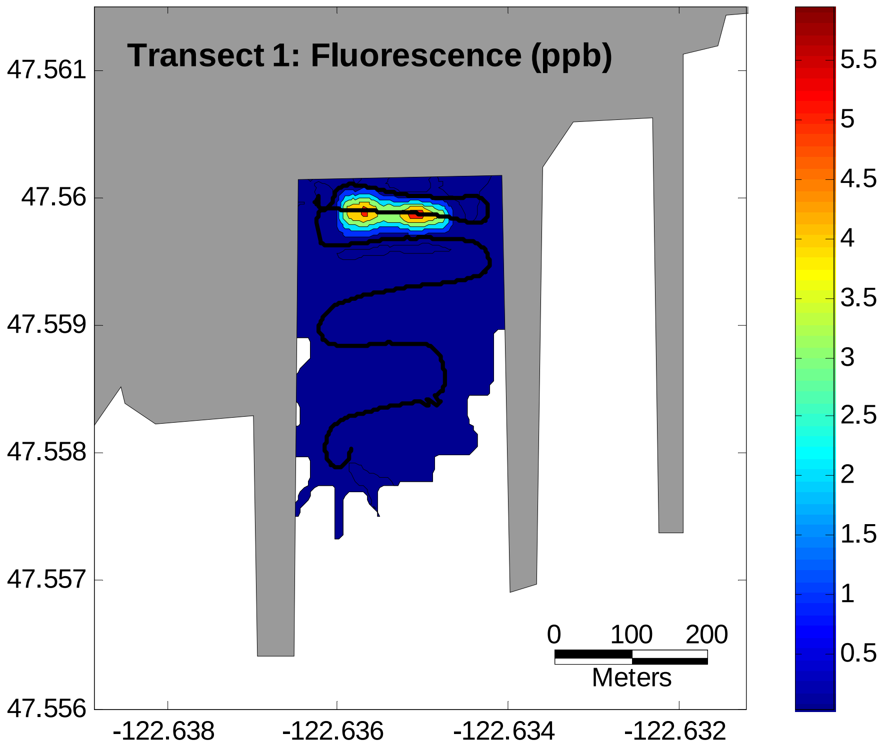

Transect 15: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

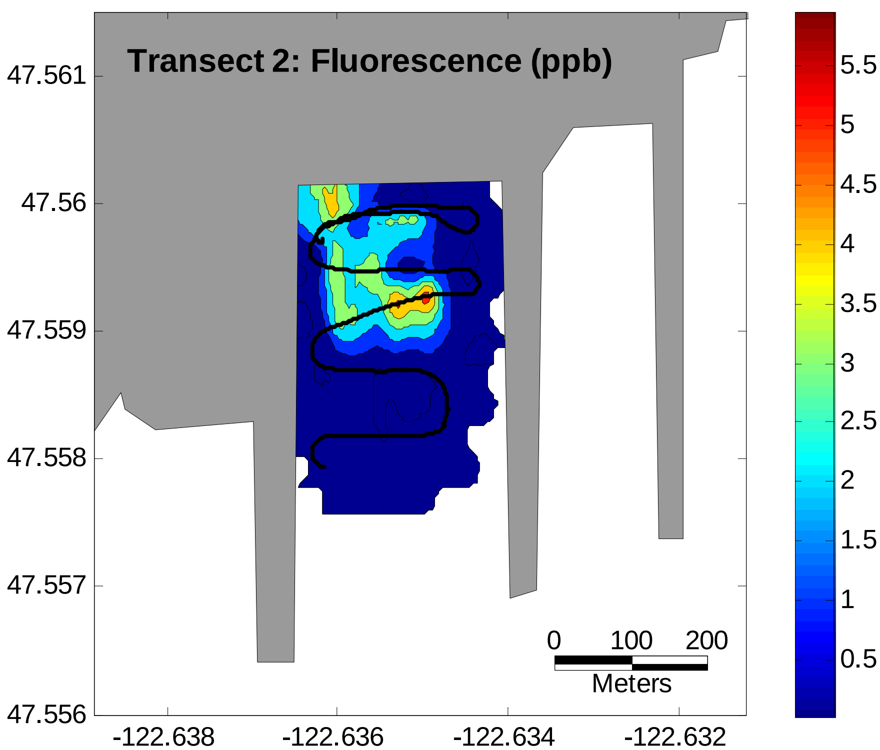

Transect 16: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

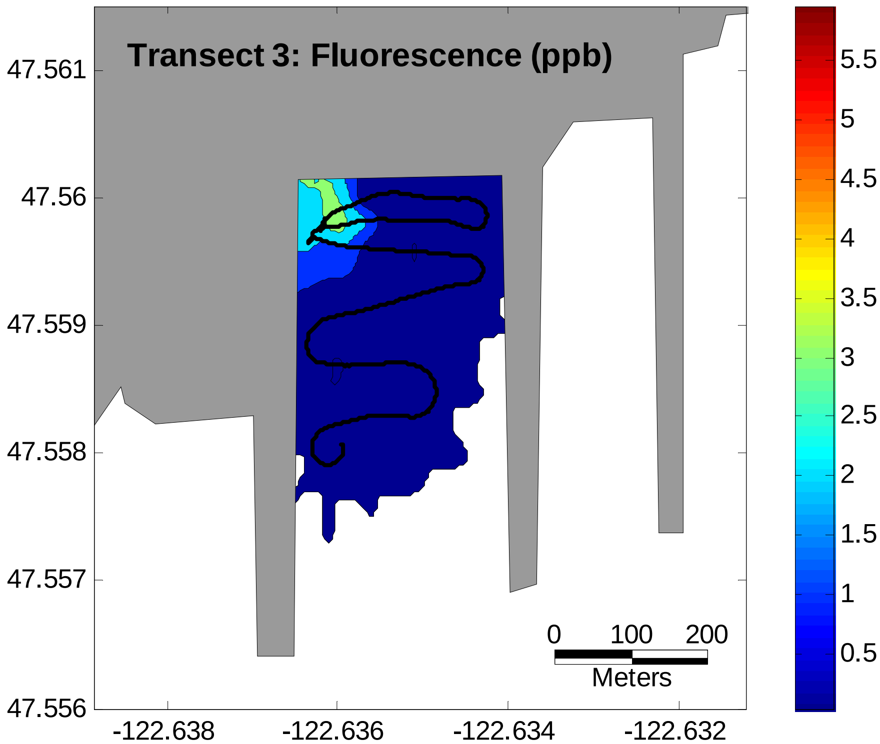

Transect 17: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

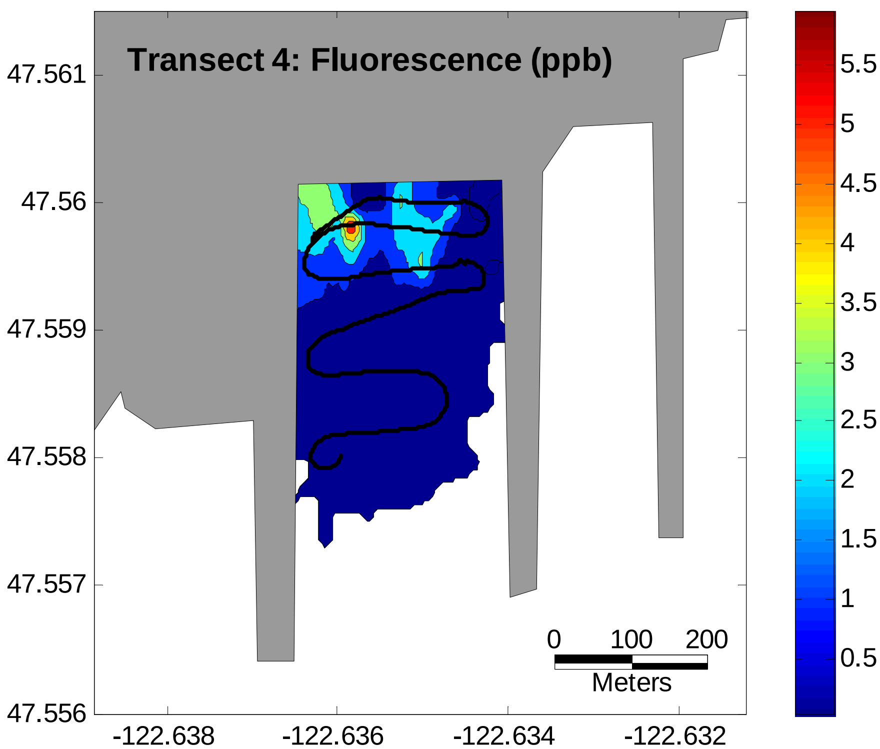


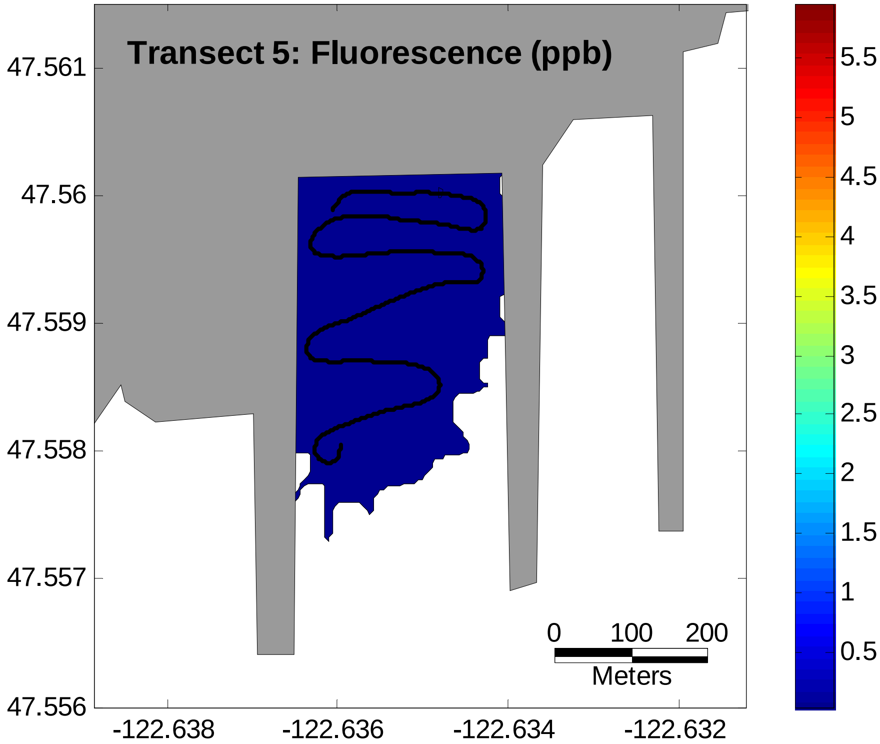
Transect 18: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

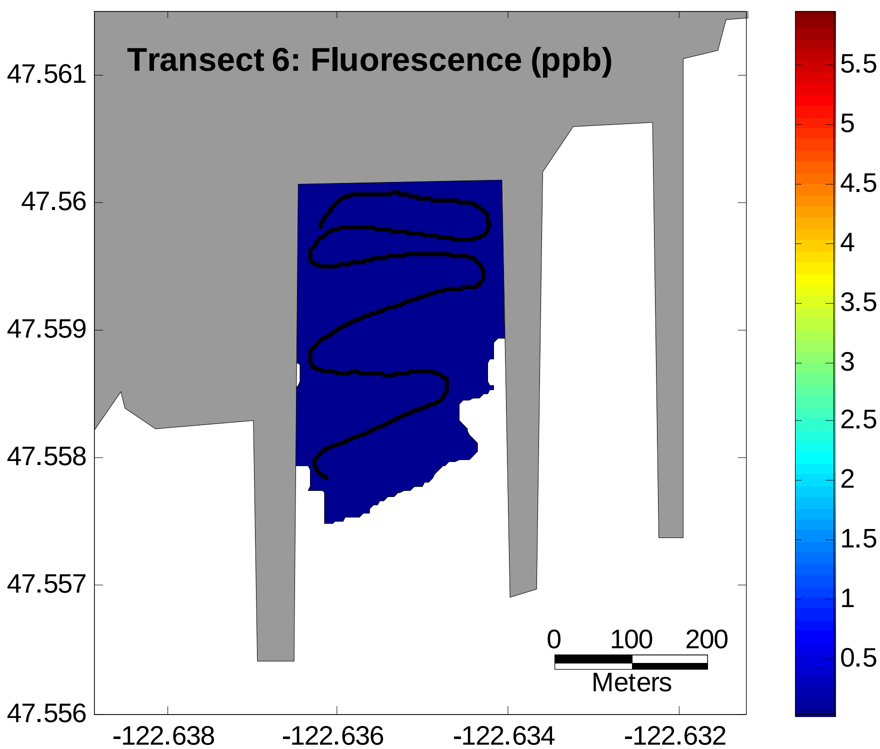

Transect 1: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

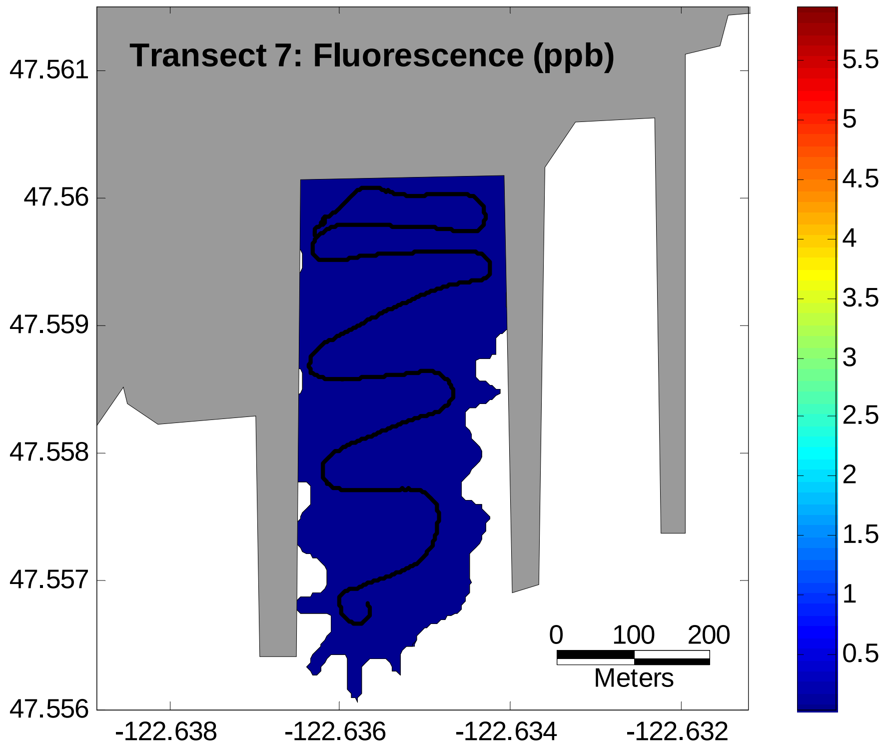

Transect 2: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

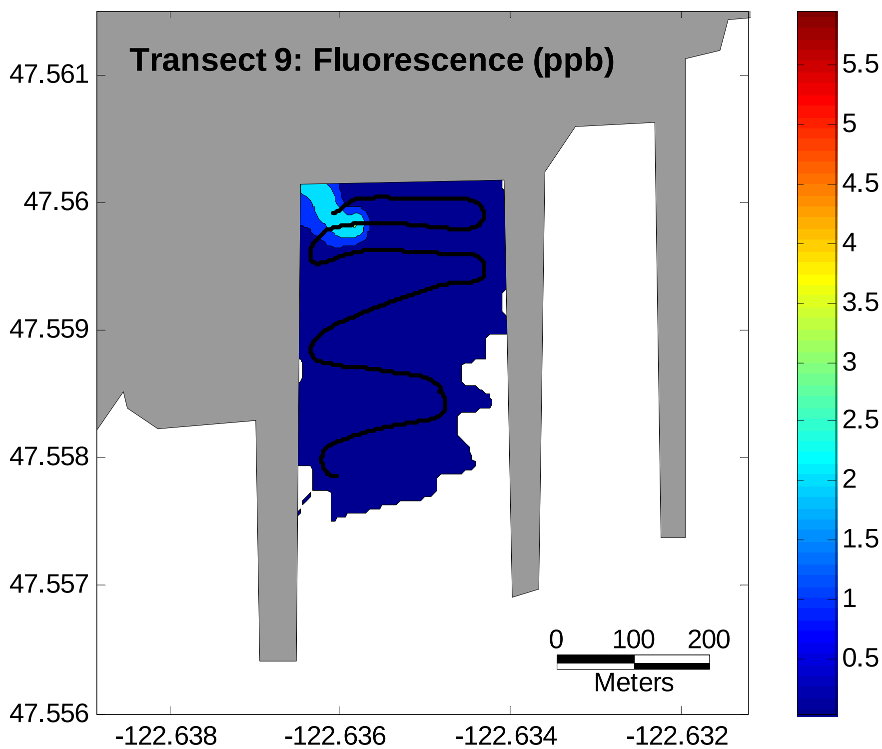

Transect 3: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

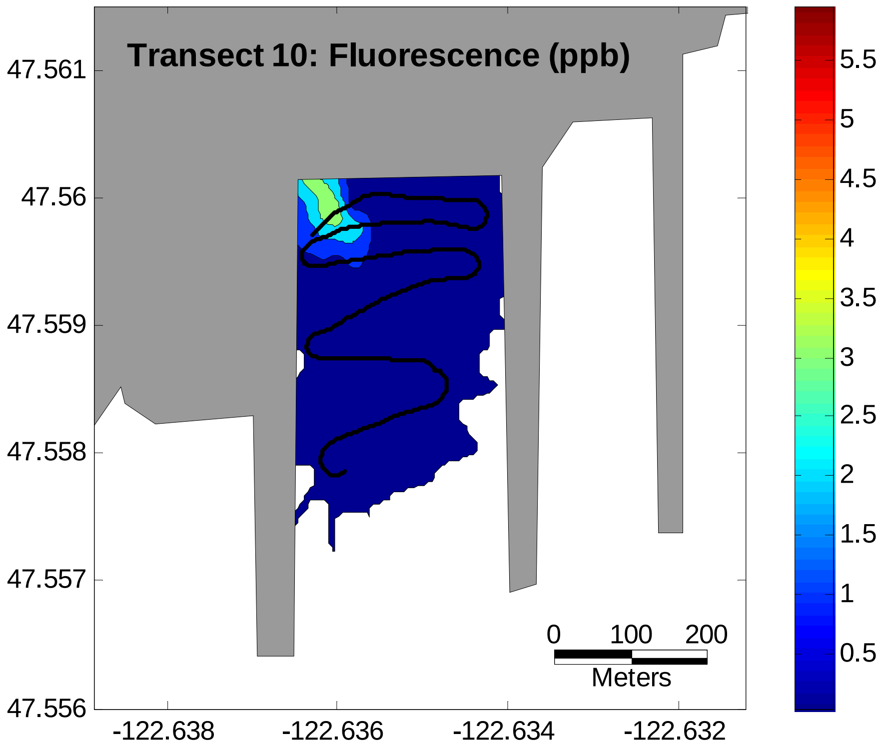

Transect 4: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

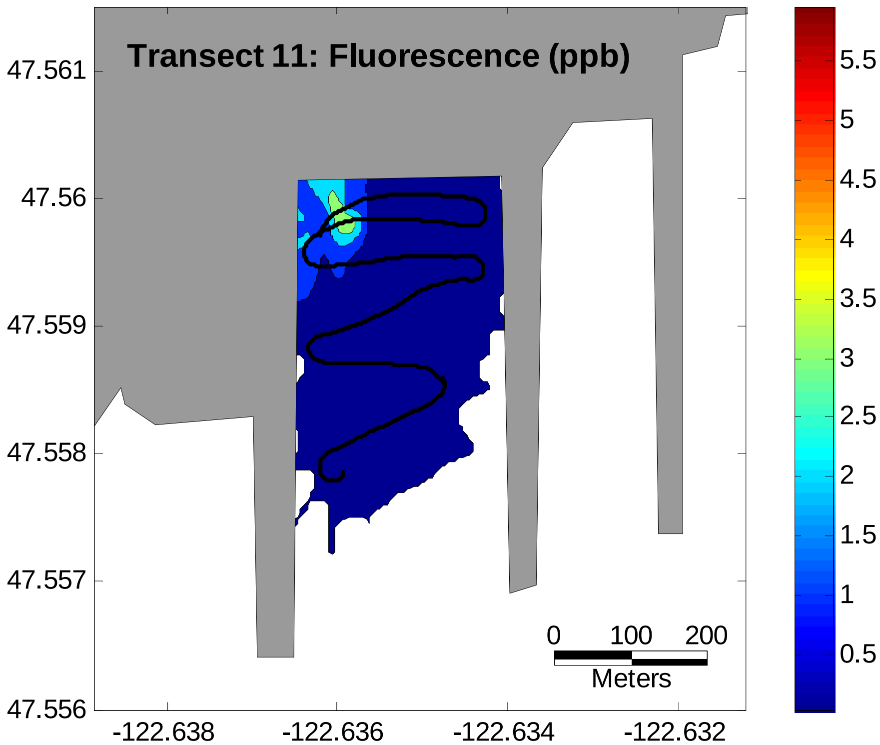

Transcript 5: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

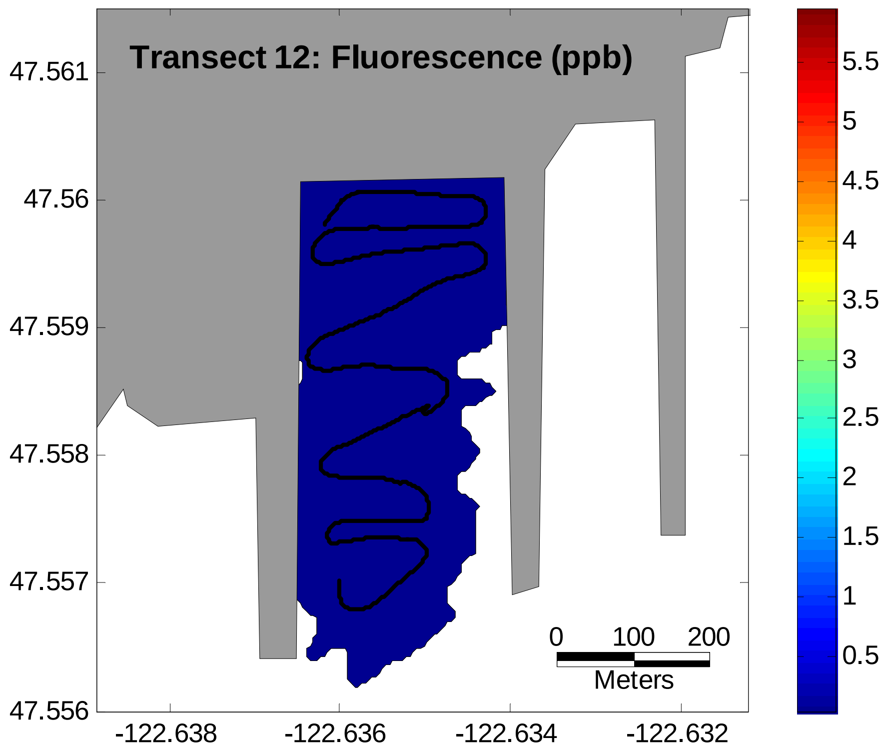

Transect 6: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

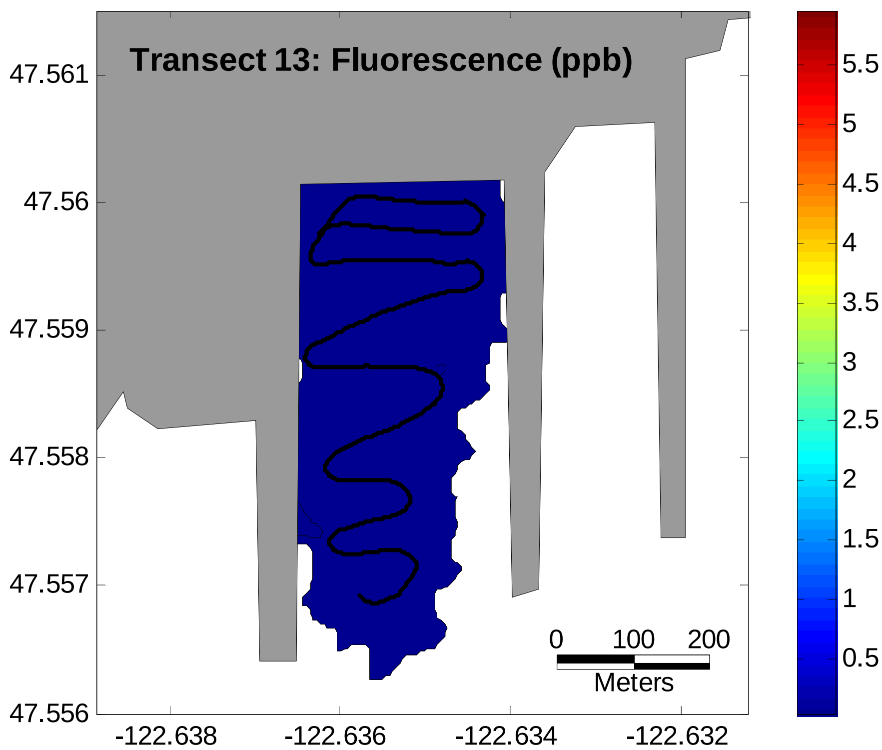

Transect 7: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

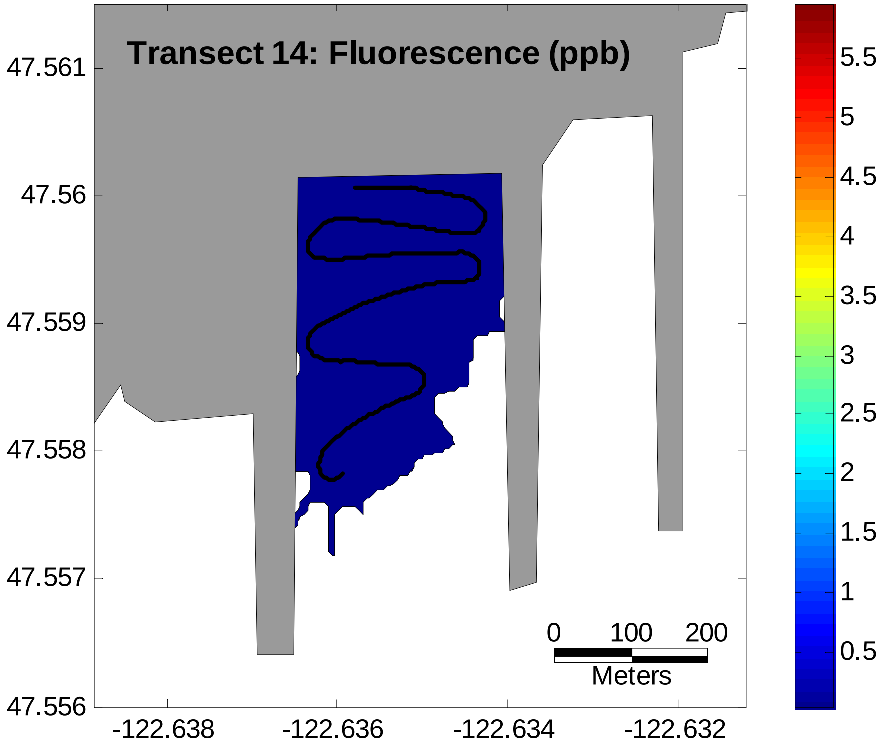

Transect 9: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 10: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

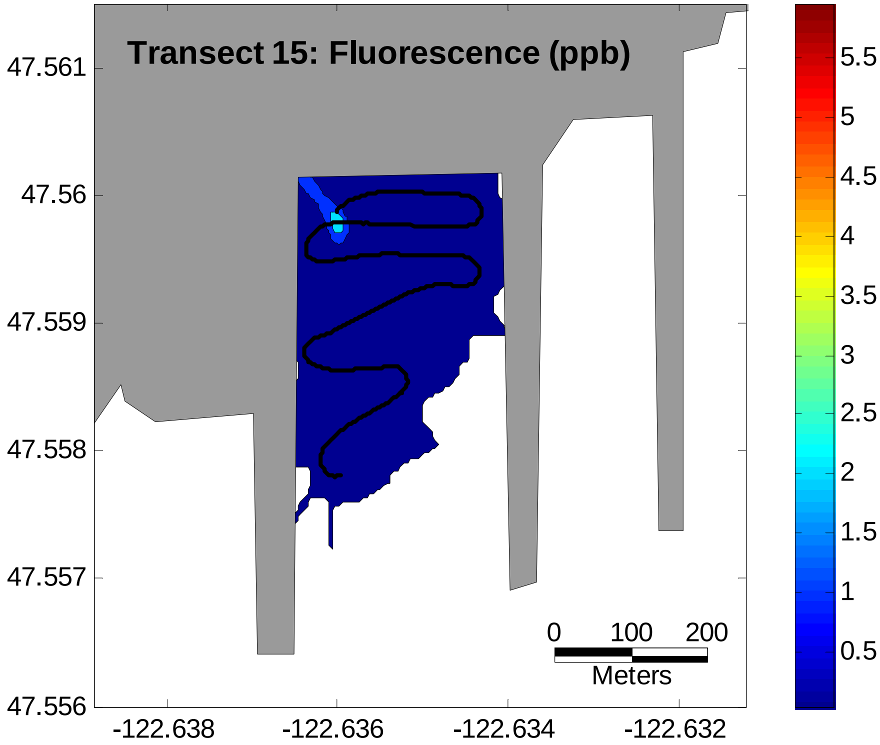

Transect 11: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 12: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

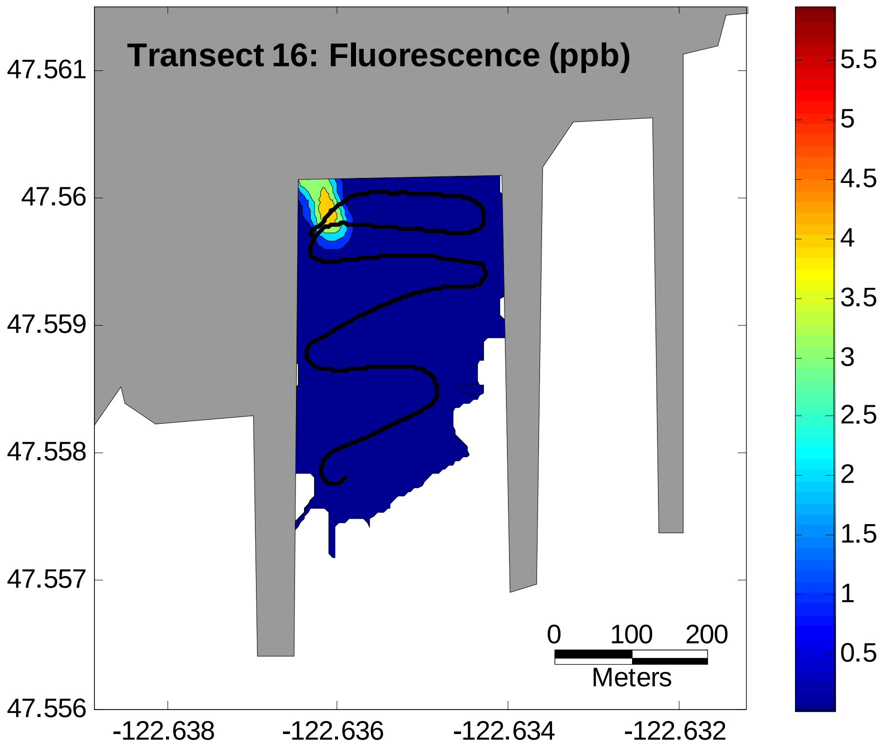

Transect 13: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5



Transect 14: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5



Transect 15: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5



Transect 16: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
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2.5
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1.5
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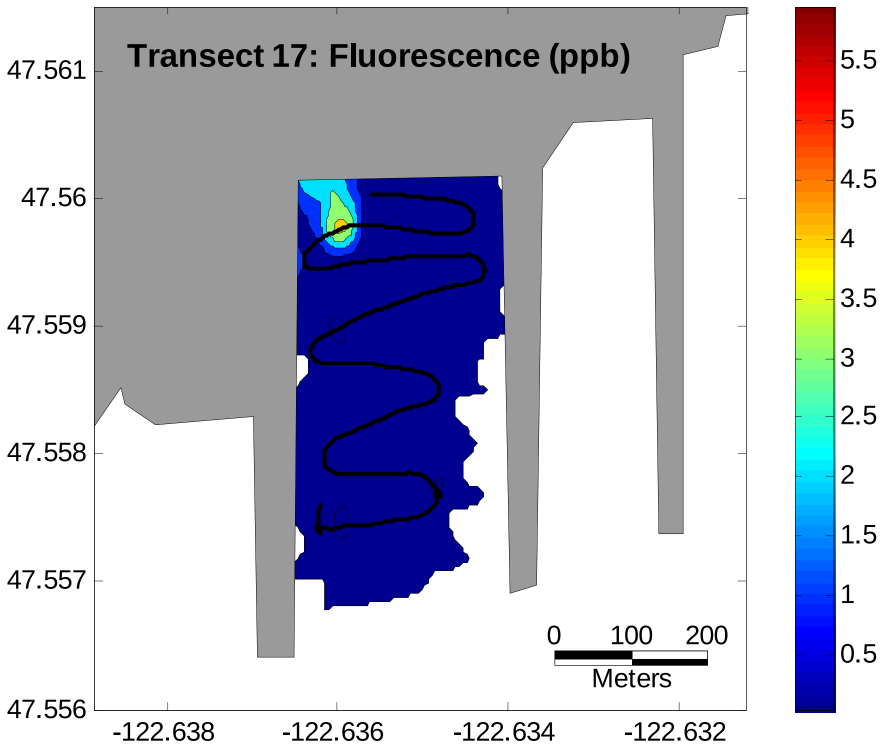

Transect 17: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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200
Meters
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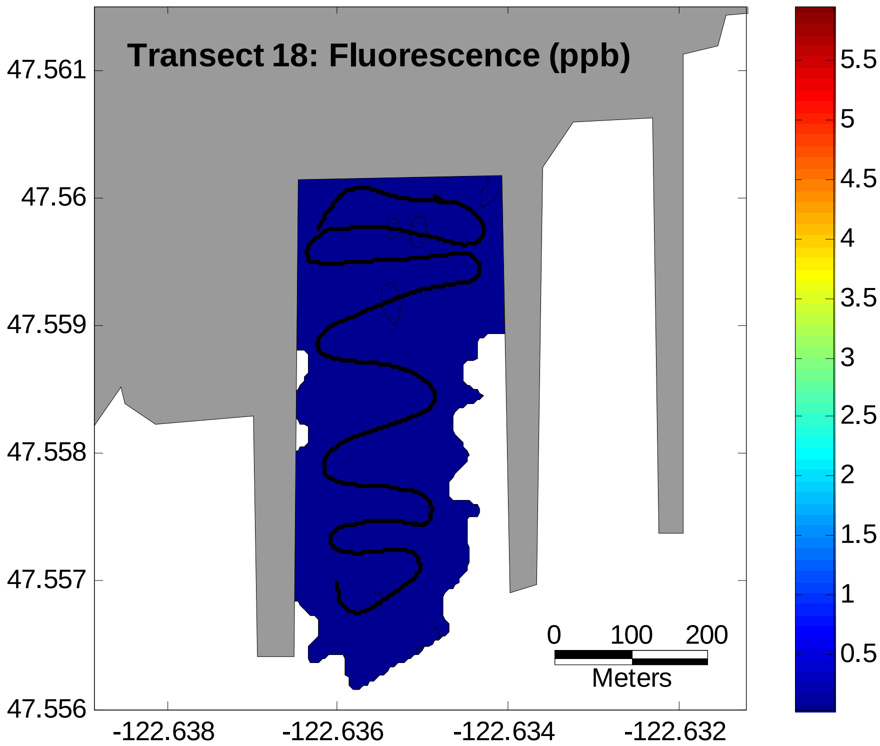
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transect 18: Fluorescence (ppb)
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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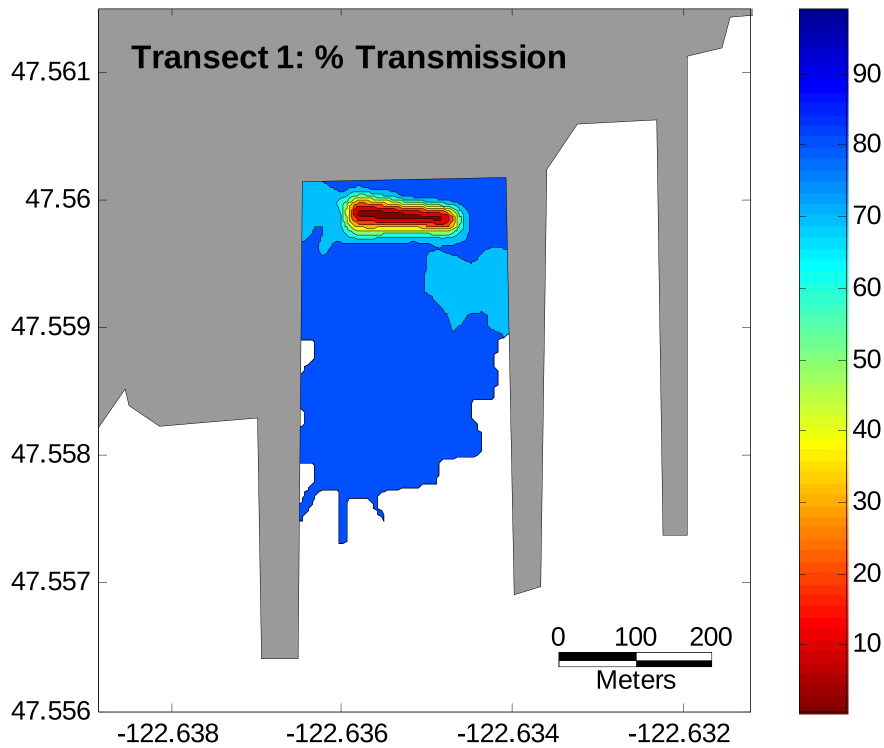
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5


Transcect 1: % Transmission
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47.56
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
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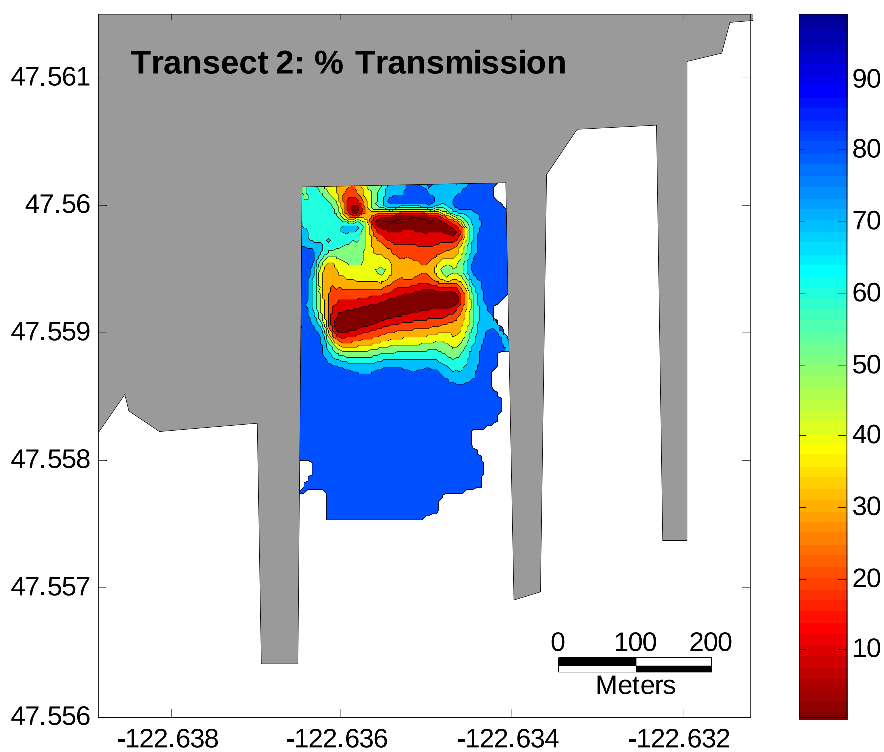
60
50
40
30
20
10


Transect 2: % Transmission
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47.558
47.557
47.556
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-122.636
-122.634
-122.632
0 100 200
Meters
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60
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40
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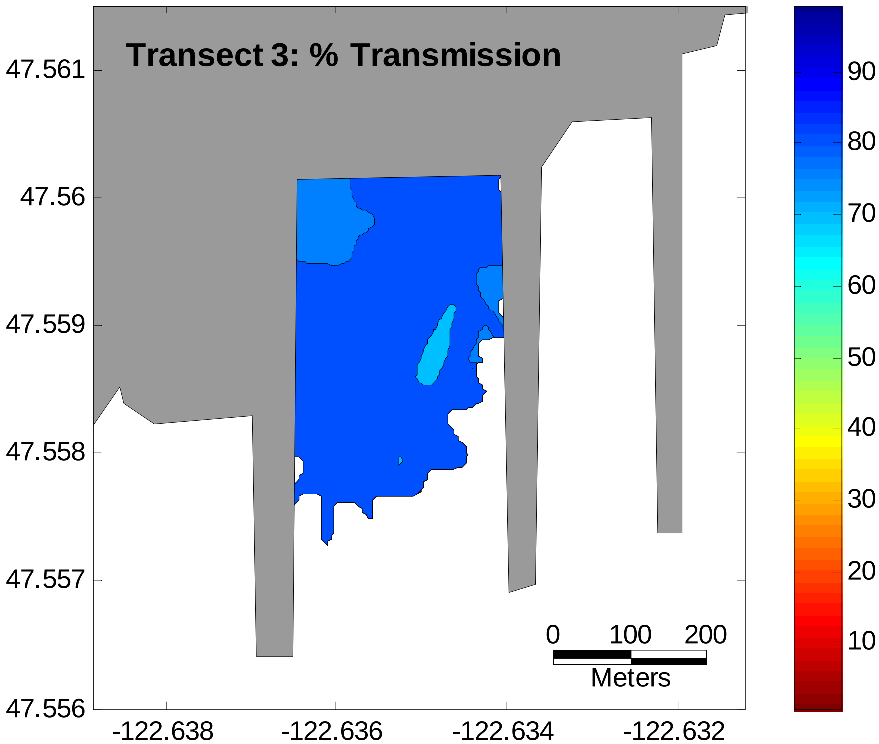
Transect 3: % Transmission
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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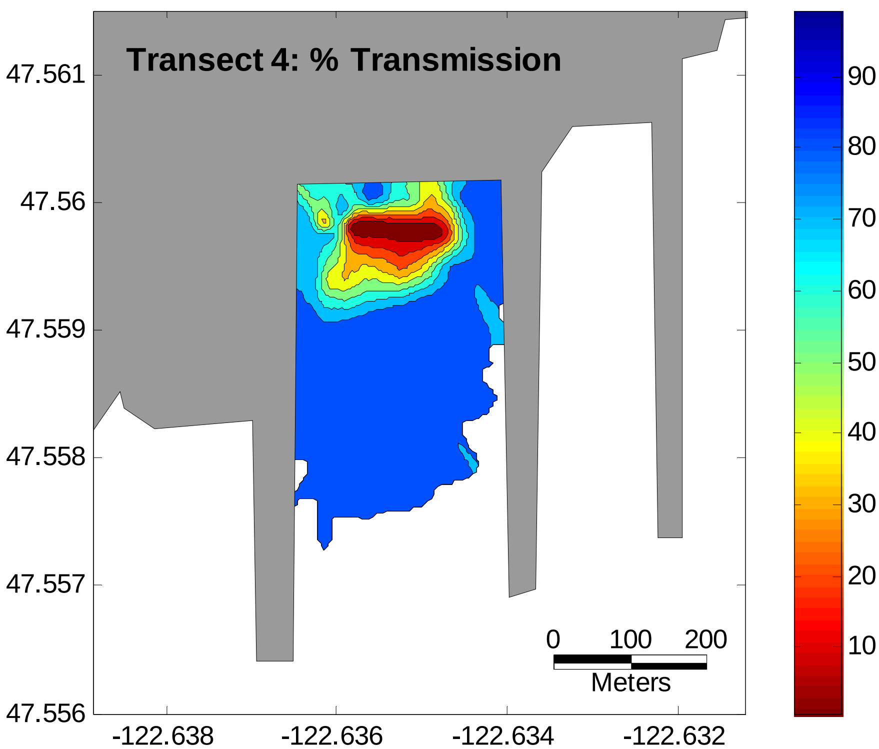
Transect 4: % Transmission
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47.557
47.556
-122.638
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-122.632
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200
Meters
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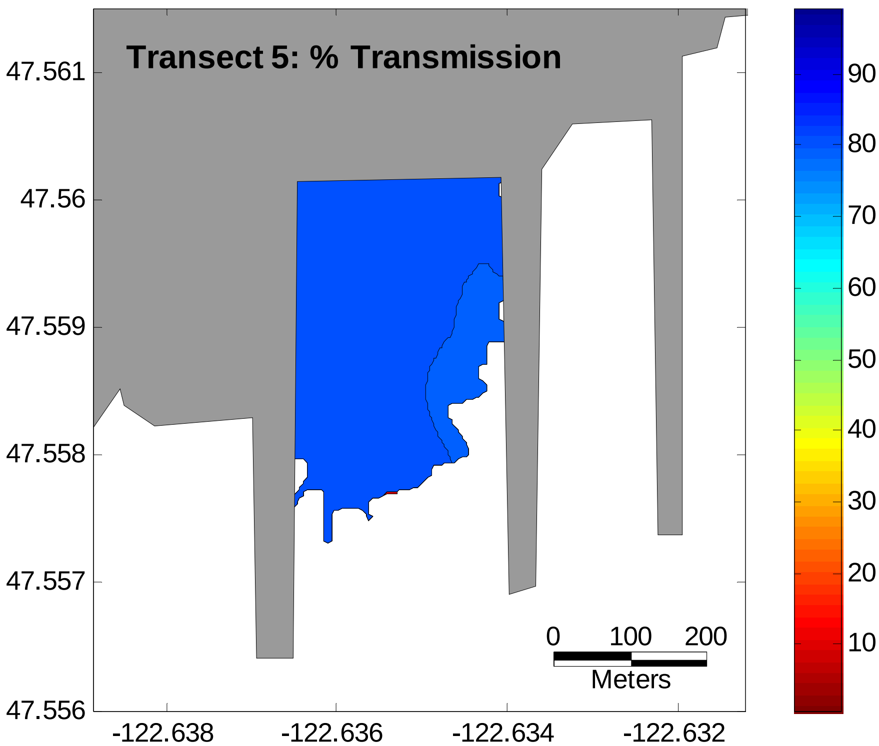
Transect 5: % Transmission
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
90
80
70
60
50
40
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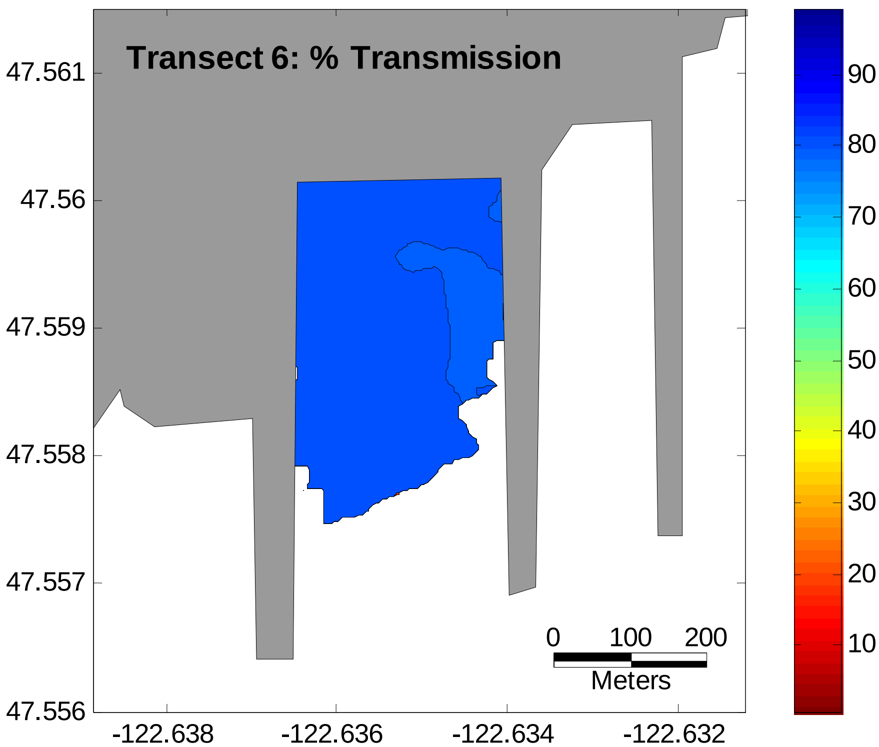
20
10


Transect 6: % Transmission
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47.559
47.558
47.557
47.556
-122.638
-122.636
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-122.632
0
100
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Meters
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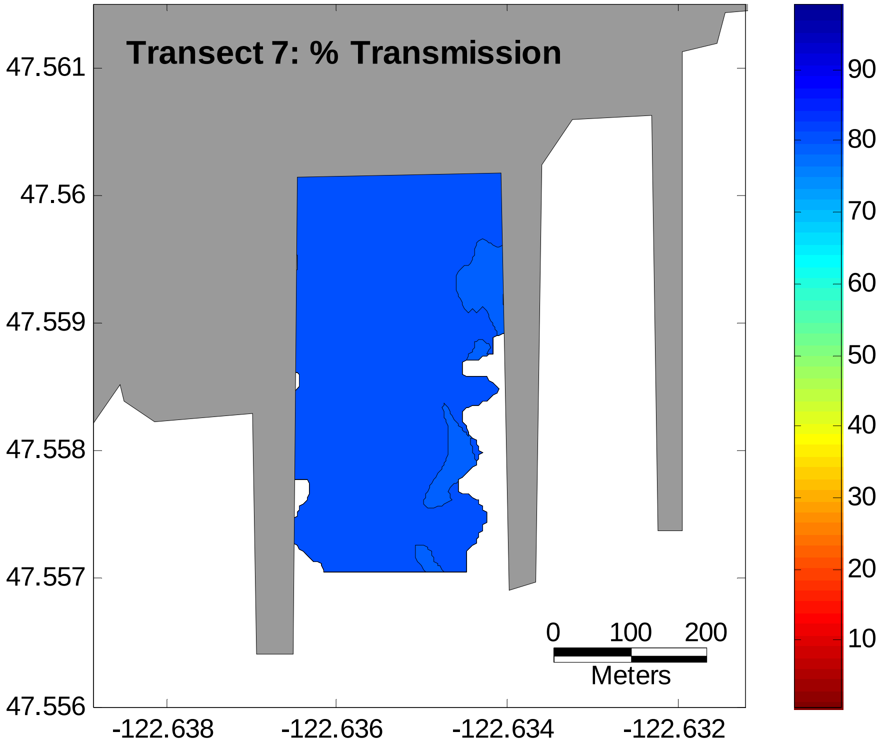
Transect 7: % Transmission
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47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
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-122.632
0
100
200
Meters
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80
70
60
50
40
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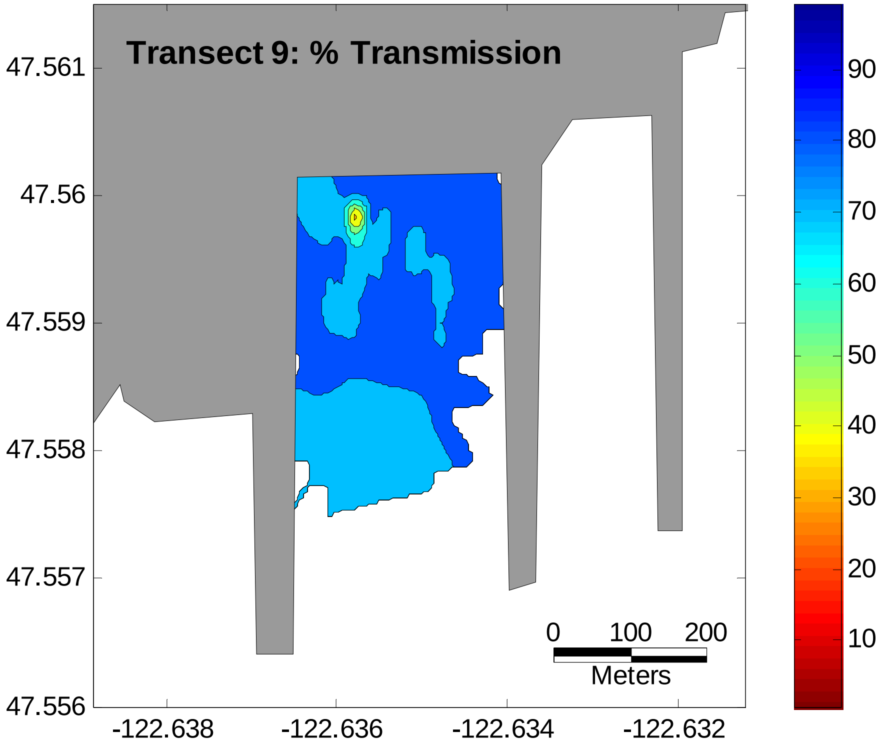
20
10


Transect 9: % Transmission
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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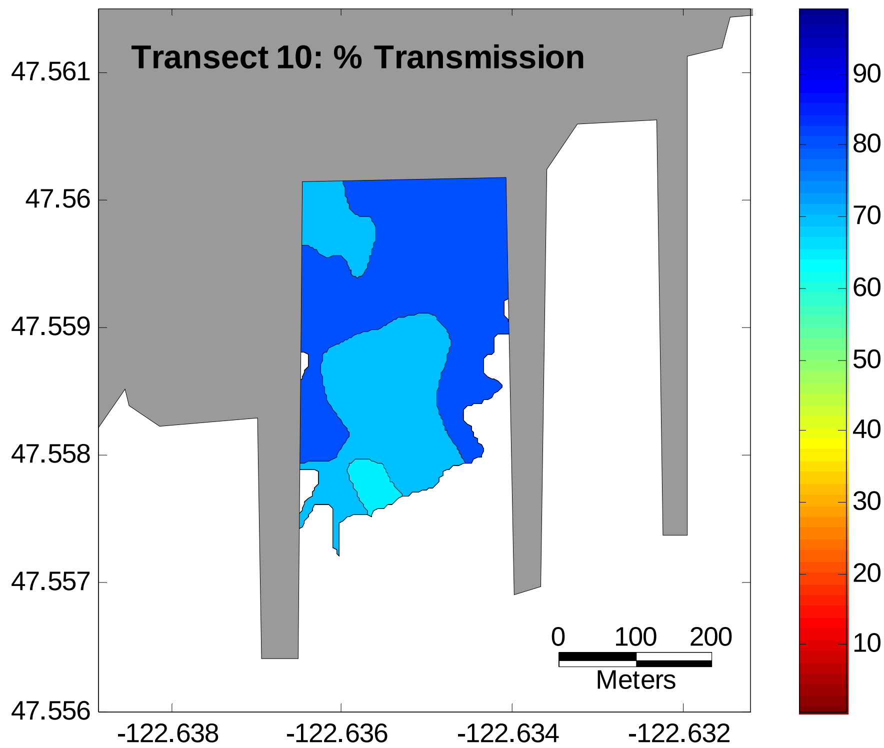
Transect 10: % Transmission
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47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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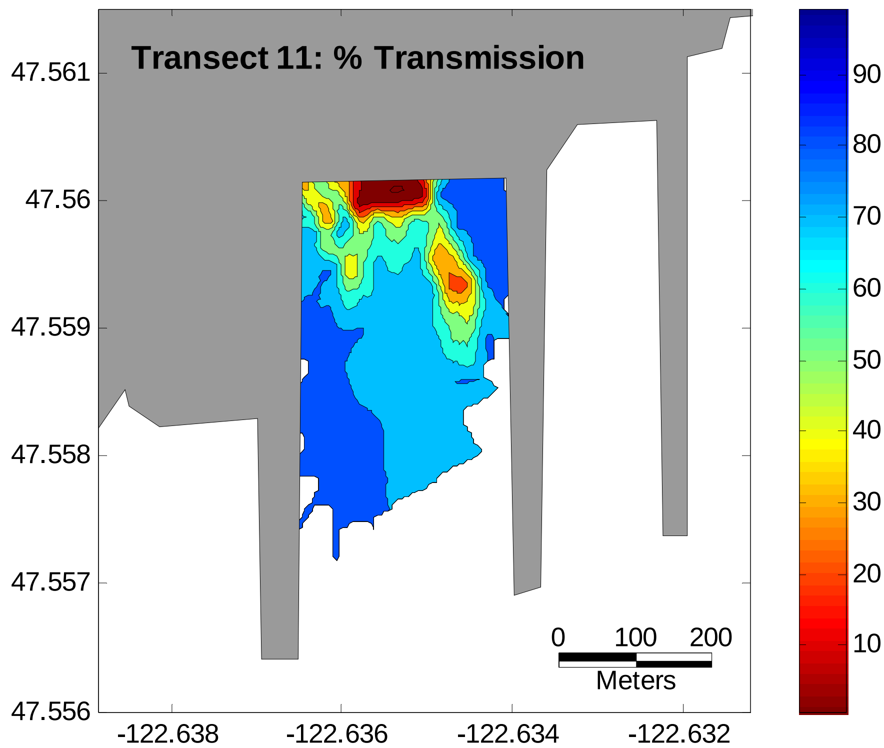
Transect 11: % Transmission
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47.56
47.559
47.558
47.557
47.556
-122.638
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-122.632
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Meters
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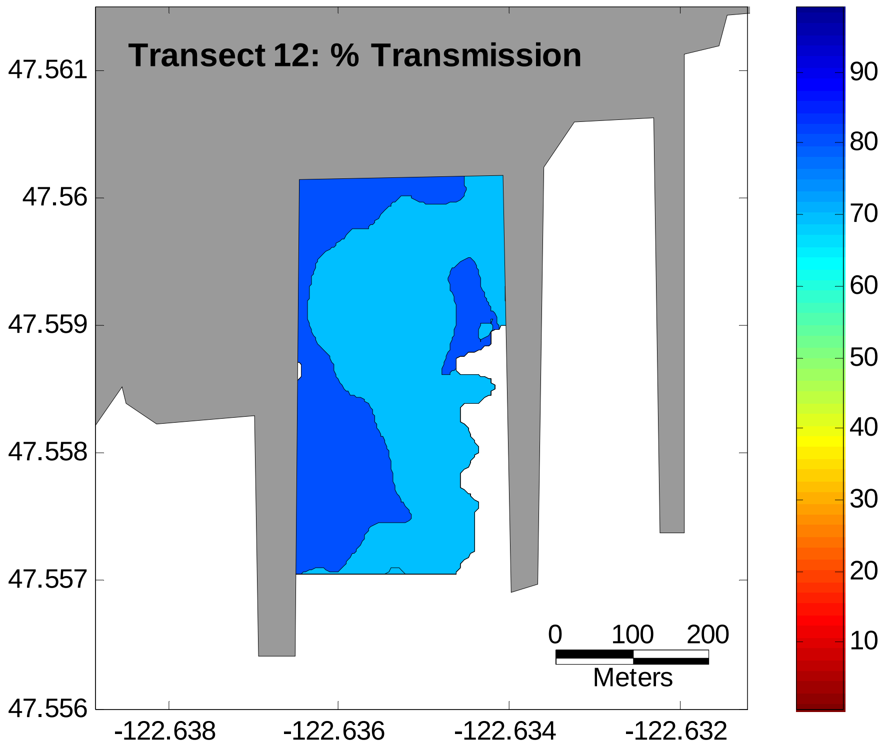
Transcect 12: % Transmission
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
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Meters
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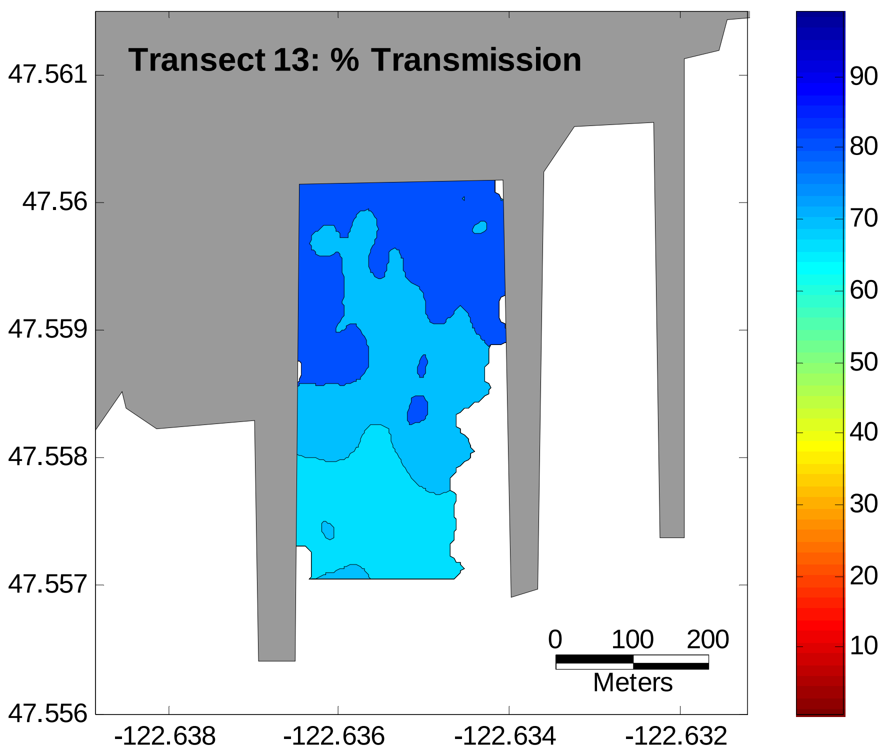
Transect 13: % Transmission
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47.557
47.556
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-122.632
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Meters
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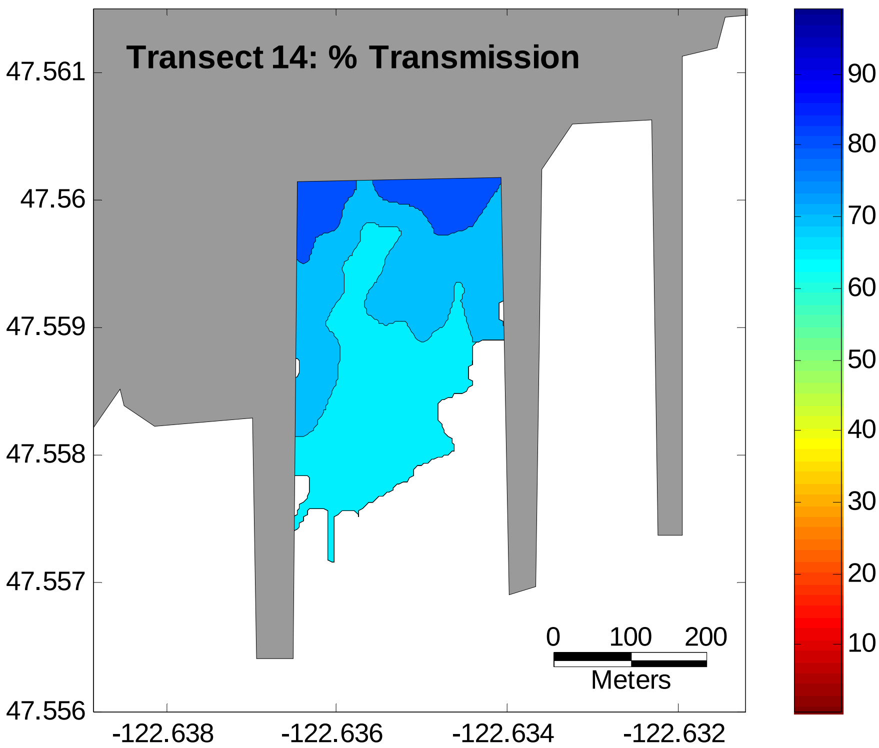
Transect 14: % Transmission
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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80
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40
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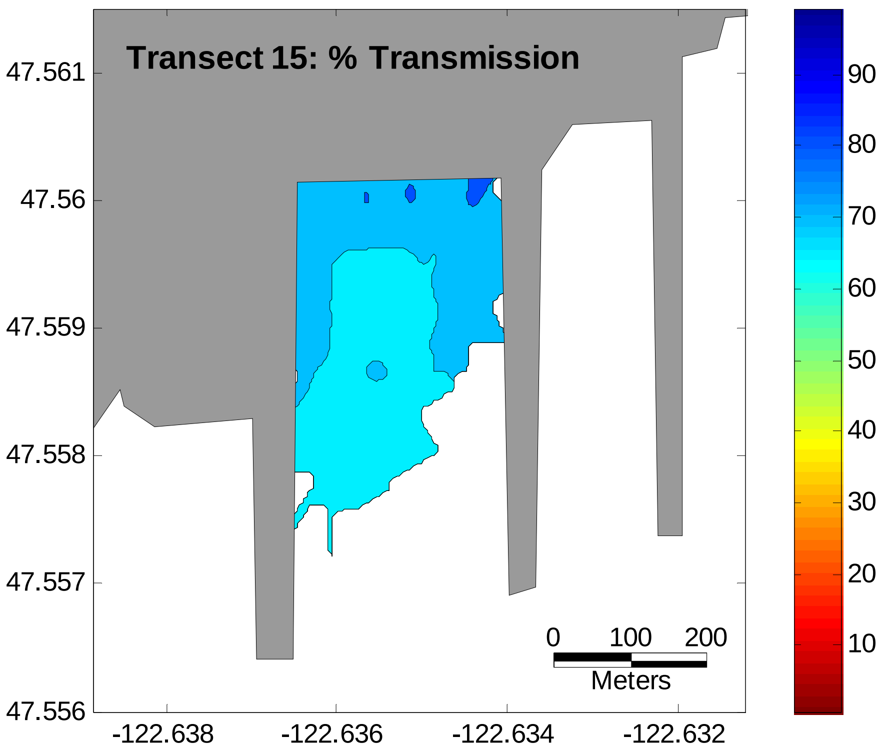
Transect 15: % Transmission
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47.56
47.559
47.558
47.557
47.556
-122.638
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-122.632
0
100
200
Meters
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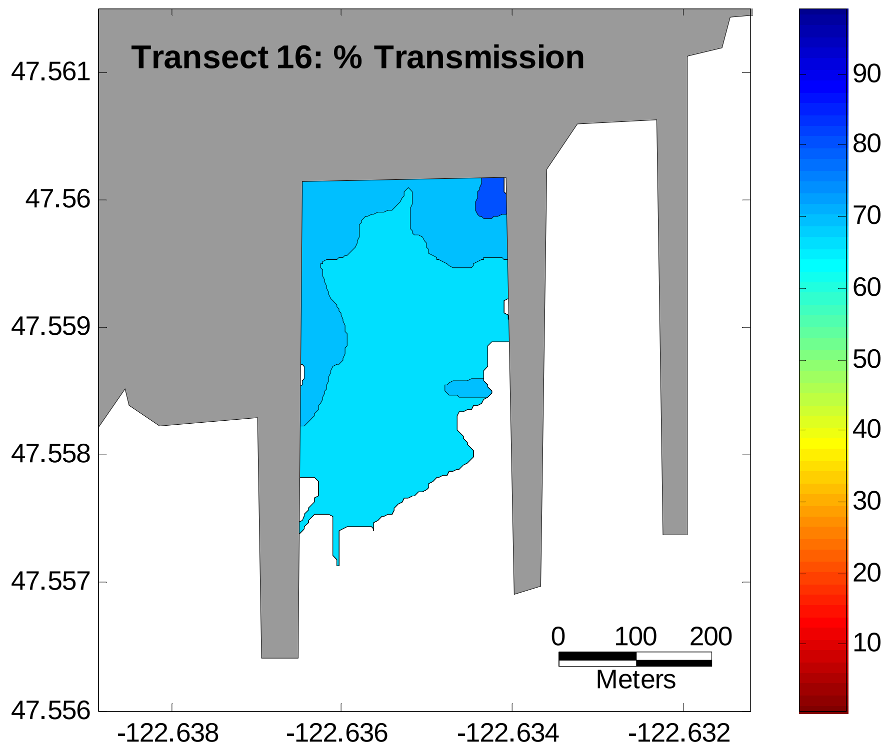

Transect 16: % Transmission
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47.559
47.558
47.557
47.556
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-122.636
-122.634
-122.632
0 100 200
Meters
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80
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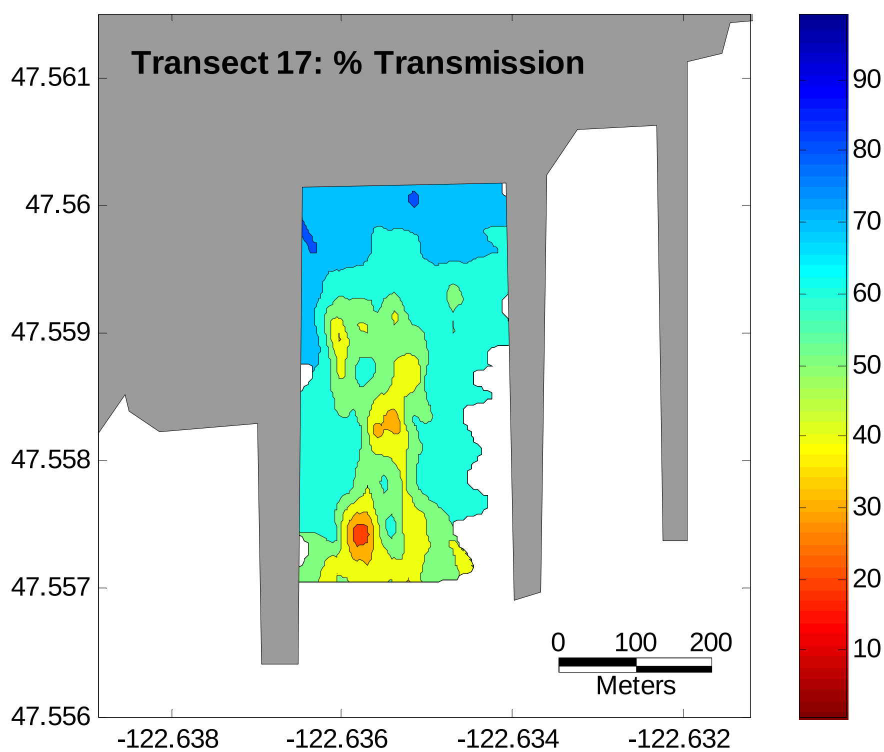

Transect 17: % Transmission
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47.56
47.559
47.558
47.557
47.556
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-122.634
-122.632
0 100 200
Meters
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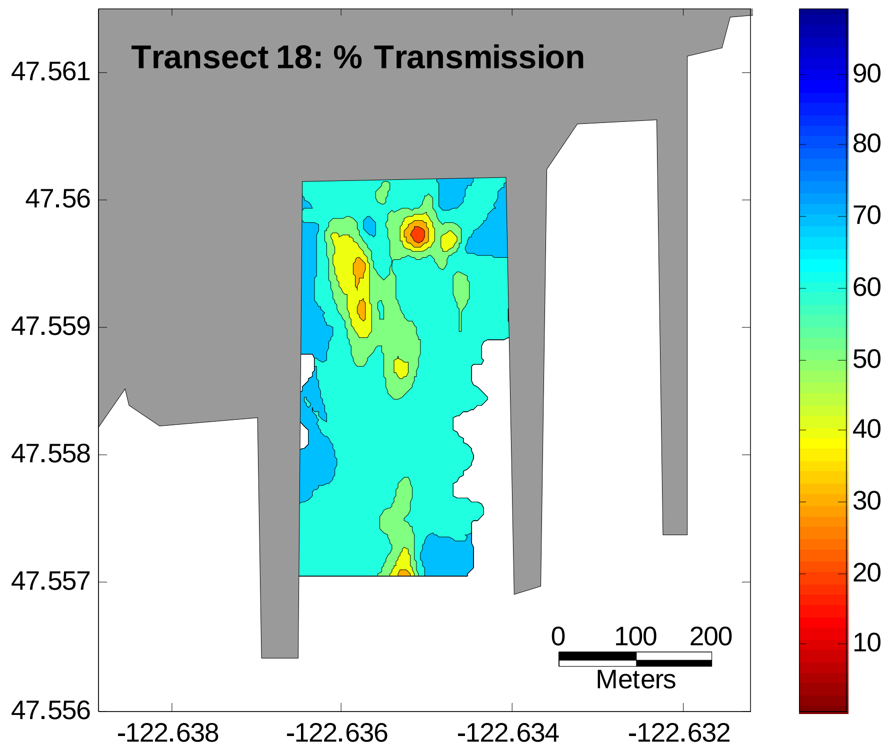
Transect 18: % Transmission
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47.56
47.559
47.558
47.557
47.556
-122.638
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-122.632
0
100
200
Meters
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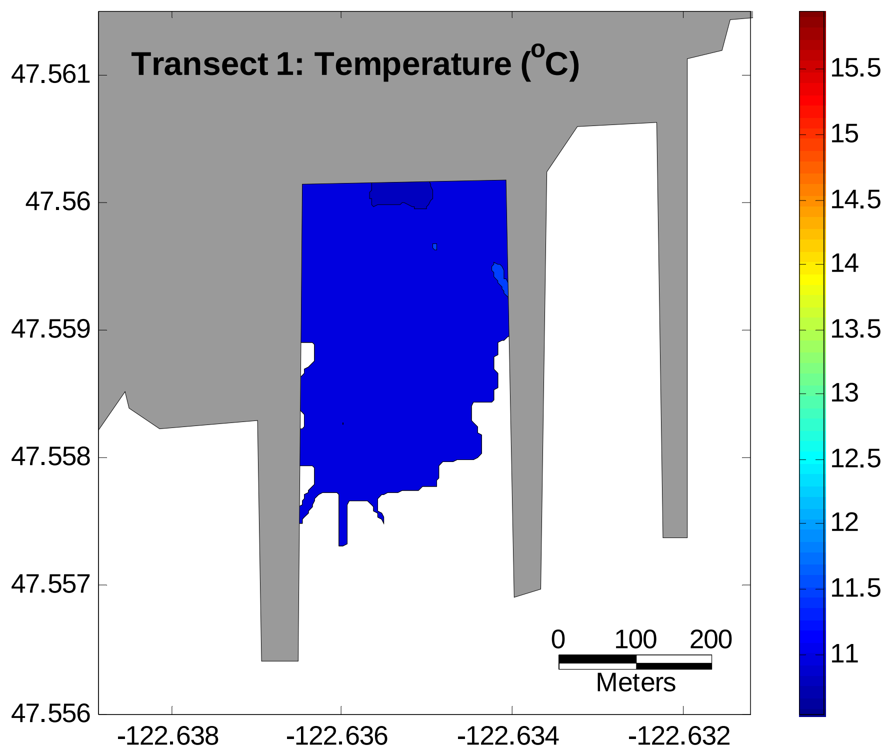
Transect 1: Temperature (°C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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100
200
Meters
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14.5
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13.5
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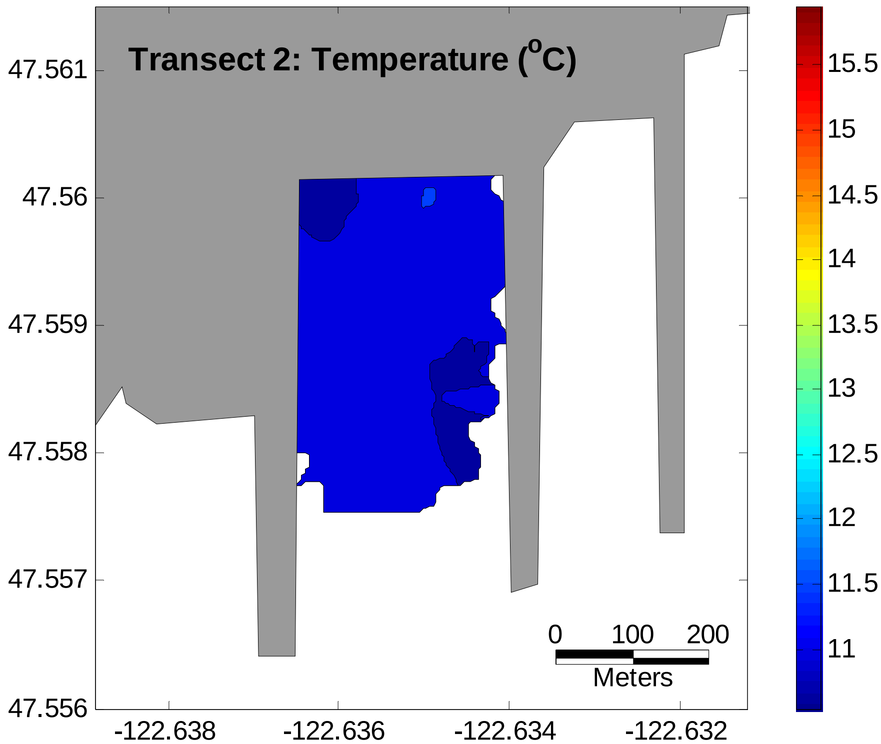
12.5
12
11.5
11


Transect 2: Temperature (^{o}C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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100
200
Meters
15.5
15
14.5
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13.5
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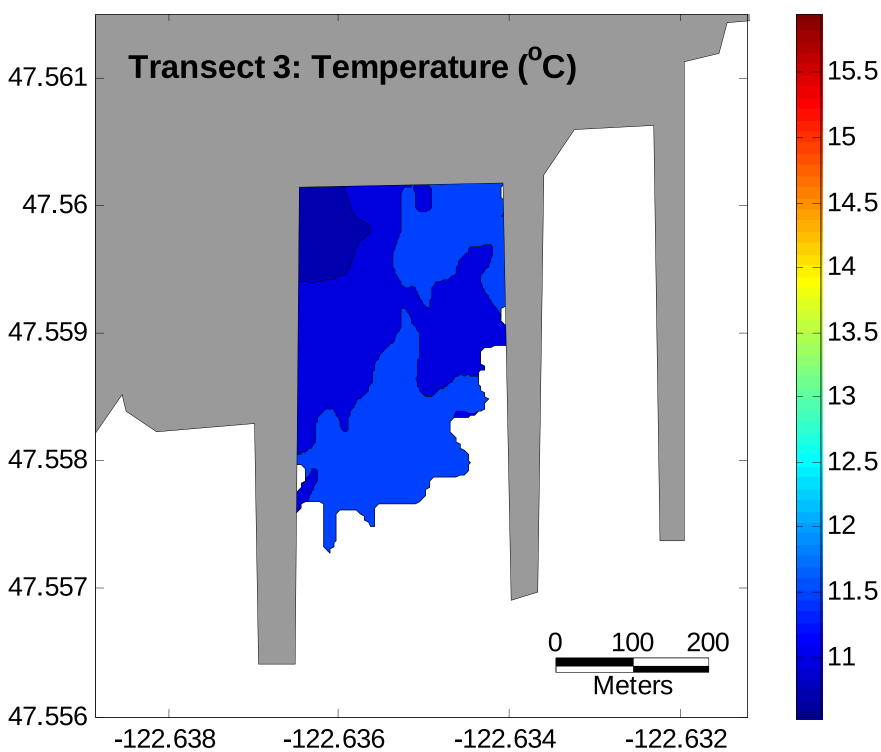
12.5
12
11.5
11


Transect 3: Temperature (^{o}C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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100
200
Meters
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14.5
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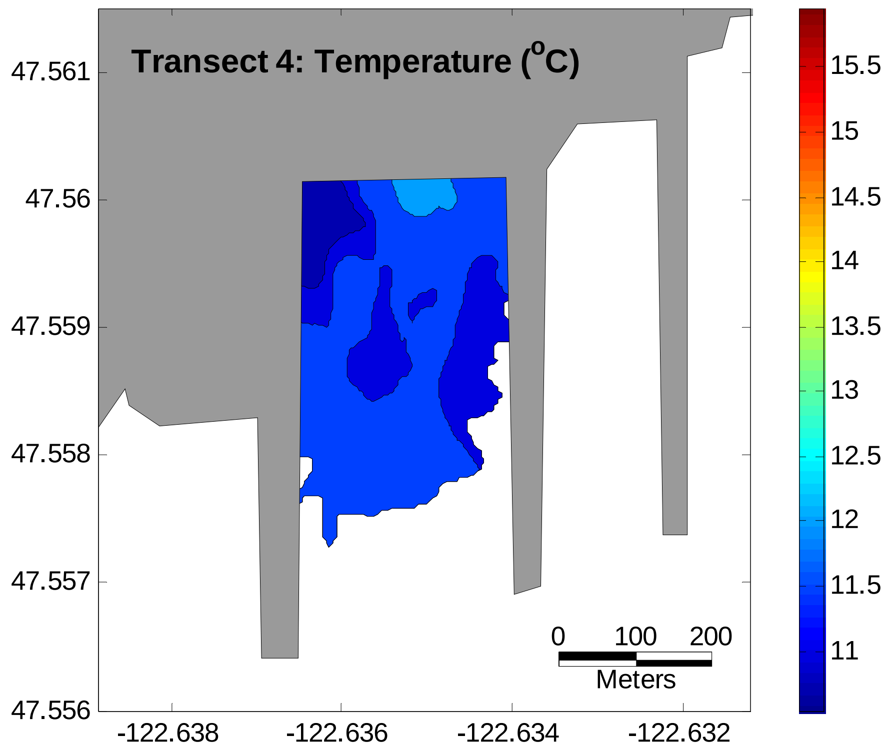
11.5
11


Transect 4: Temperature (^{o}C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
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14.5
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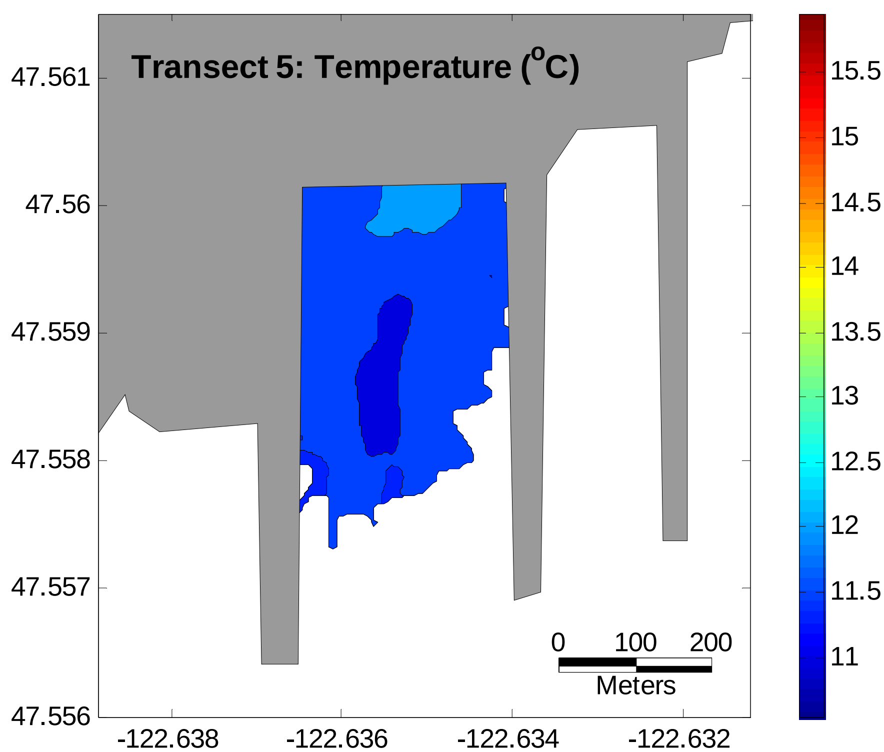
Transect 5: Temperature (^{o}C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
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14.5
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13.5
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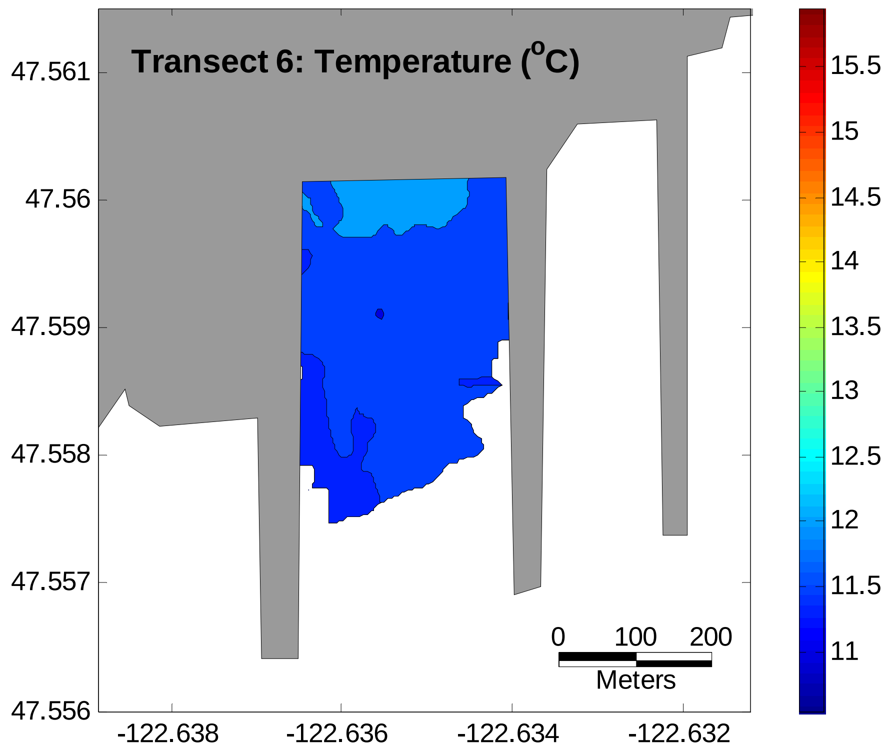
Transect 6: Temperature (°C)
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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200
Meters
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14.5
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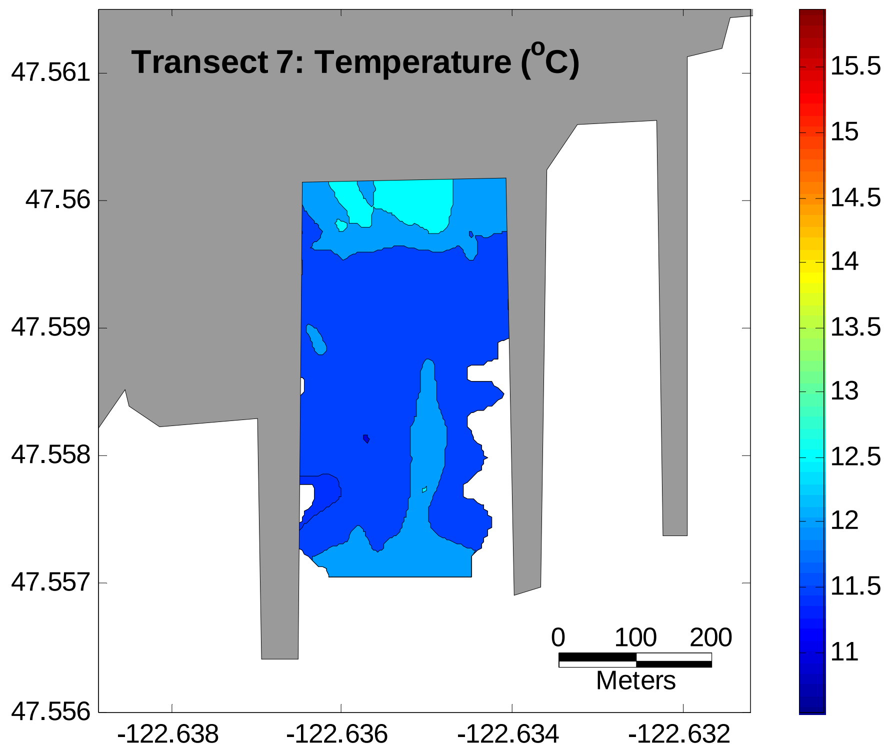
Transect 7: Temperature (°C)
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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100
200
Meters
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14.5
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13.5
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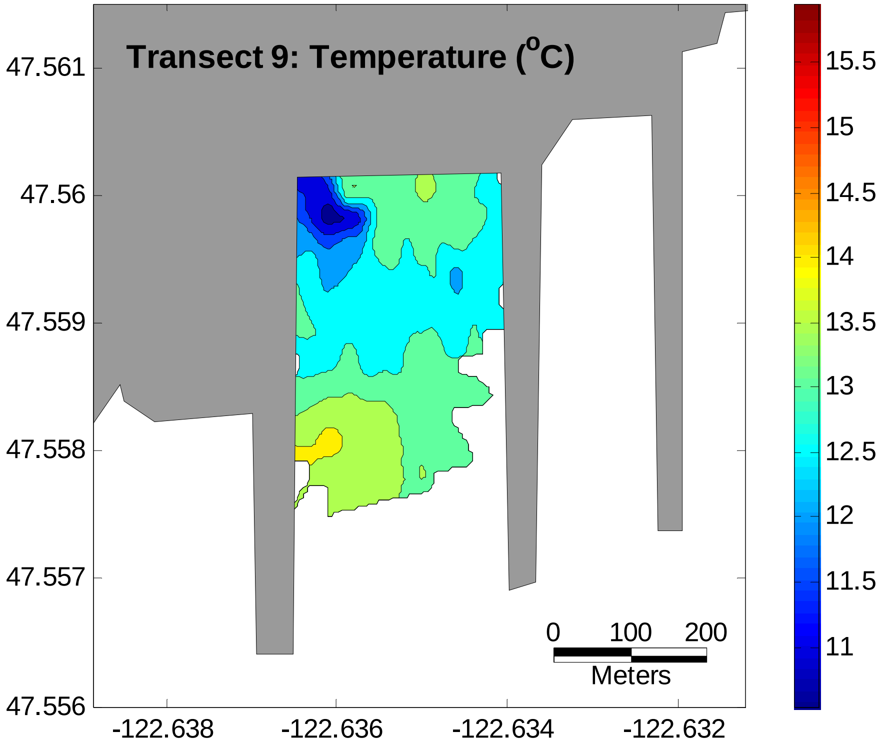
12
11.5
11


Transect 9: Temperature (^{o}C)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
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100
200
Meters
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14.5
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13.5
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11.5
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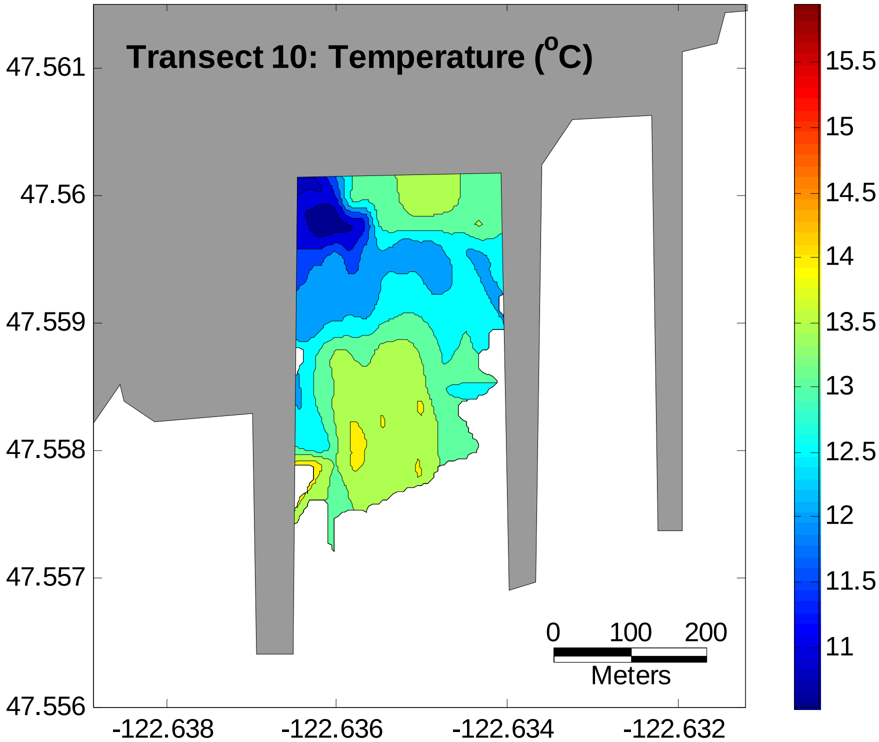
Transect 10: Temperature (^{o}C)
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47.557
47.556
-122.638
-122.636
-122.634
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100
200
Meters
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14.5
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11.5
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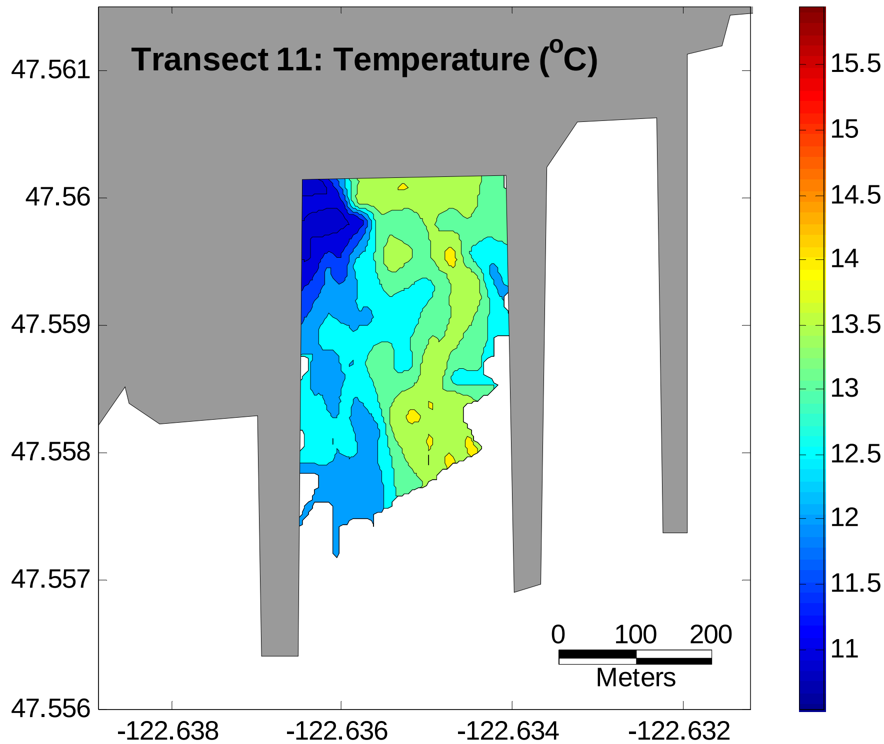

Transect 11: Temperature (^oC)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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12.5
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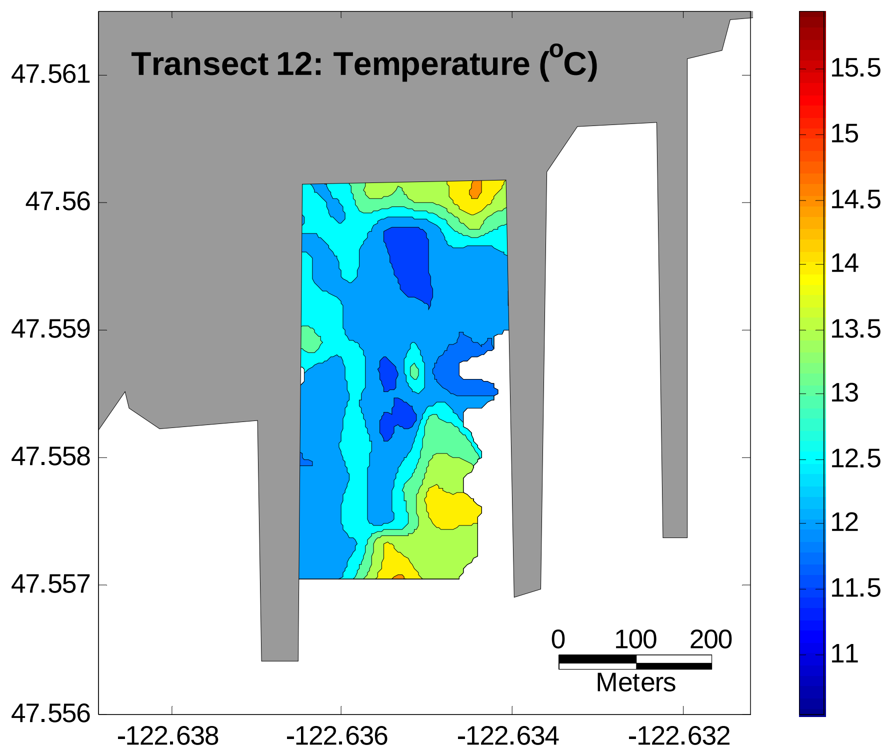

Transect 12: Temperature (^oC)
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47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
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14.5
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13.5
13
12.5
12
11.5
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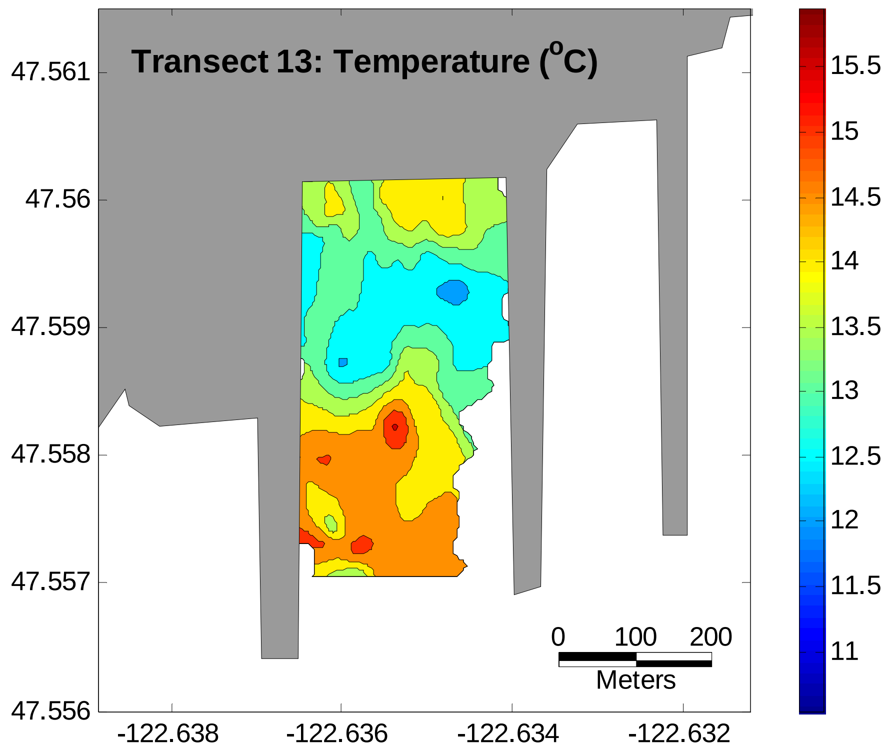

Transect 13: Temperature (oC)
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47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
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100
200
Meters
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14.5
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13.5
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11.5
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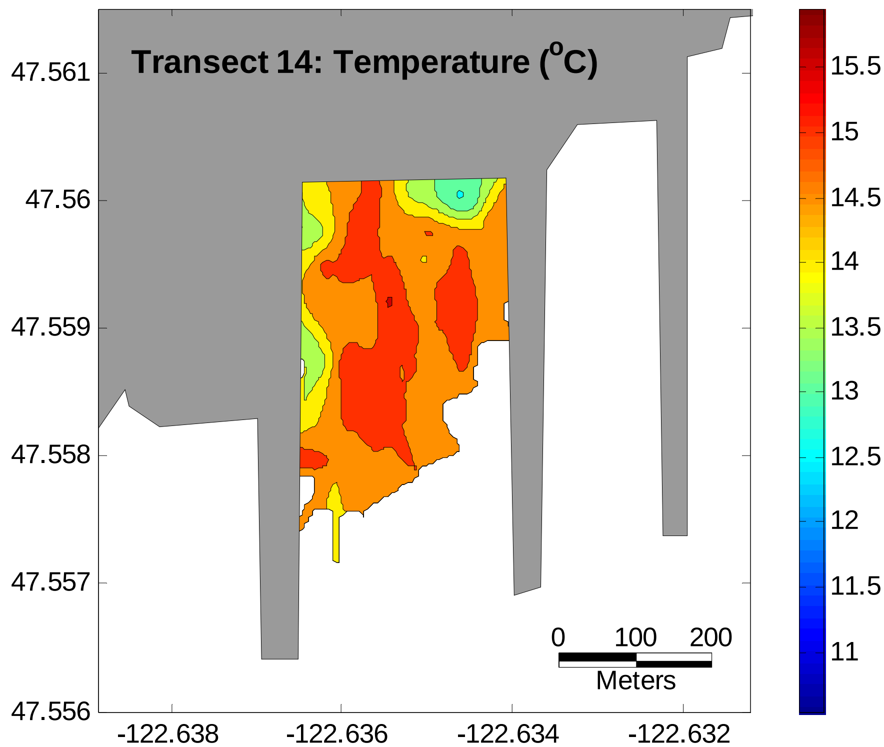

Transect 14: Temperature (oC)
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47.559
47.558
47.557
47.556
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-122.636
-122.634
-122.632
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100
200
Meters
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14.5
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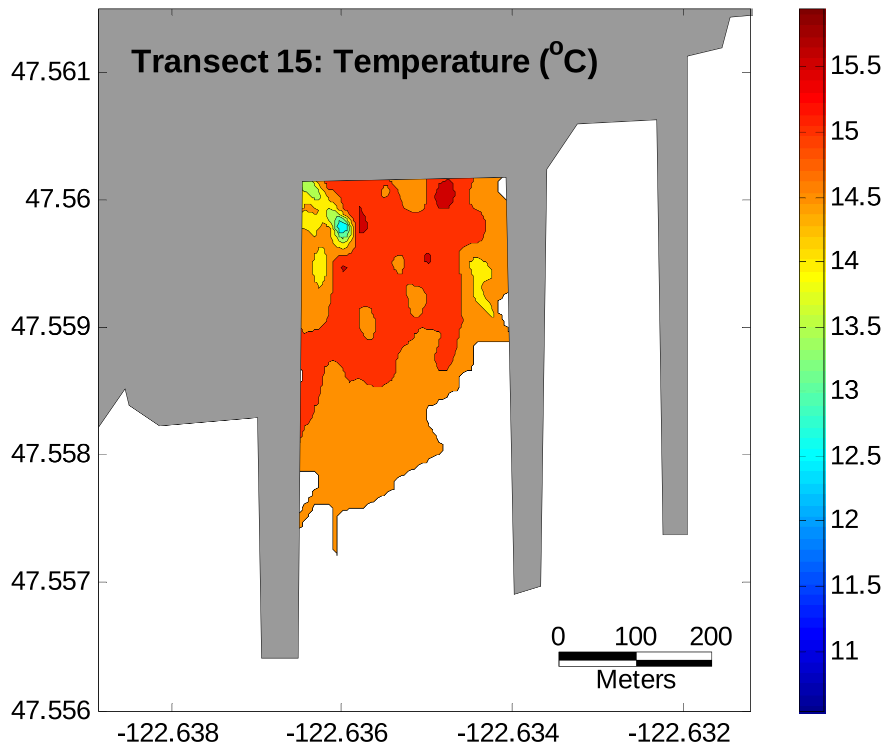
12
11.5
11


Transect 15: Temperature (^{o}C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
15.5
15
14.5
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13.5
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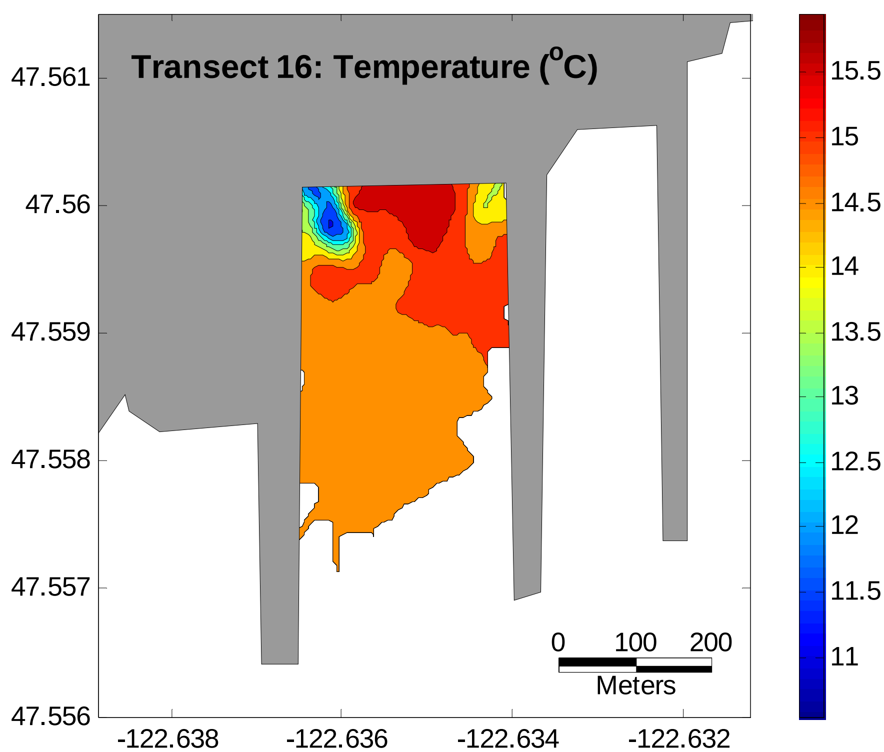
12.5
12
11.5
11


Transect 16: Temperature (^{o}C)
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47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
15.5
15
14.5
14
13.5
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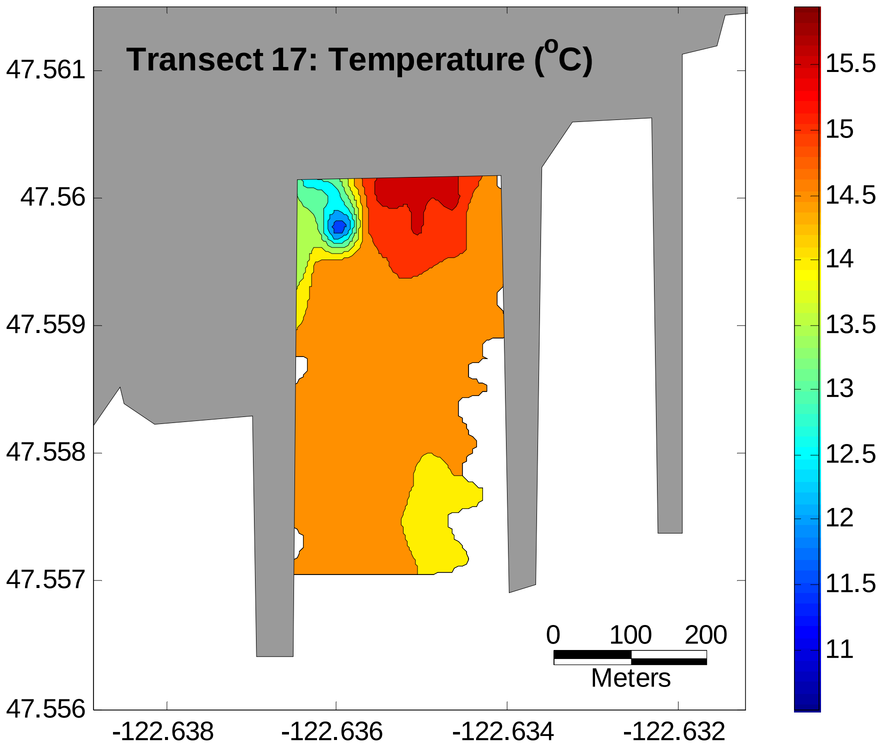
12.5
12
11.5
11


Transect 17: Temperature (^oC)
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47.559
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47.557
47.556
-122.638
-122.636
-122.634
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100
200
Meters
15.5
15
14.5
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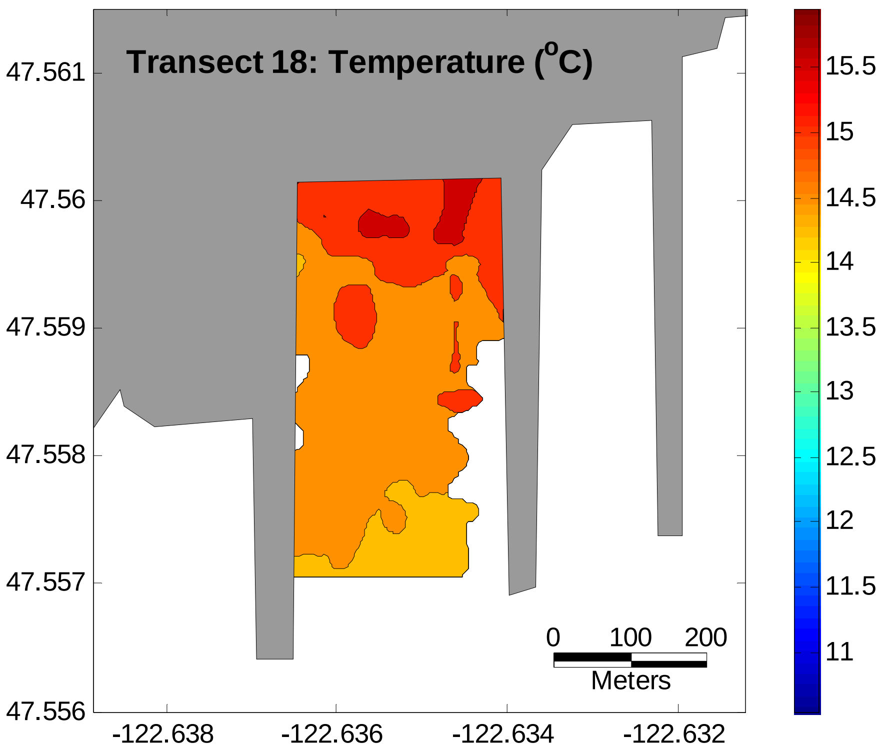
13.5
13
12.5
12
11.5
11


Transect 18: Temperature (^oC)
47.561
47.56
47.559
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47.557
47.556
-122.638
-122.636
-122.634
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200
Meters
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14.5
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13.5
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12.5
12
11.5
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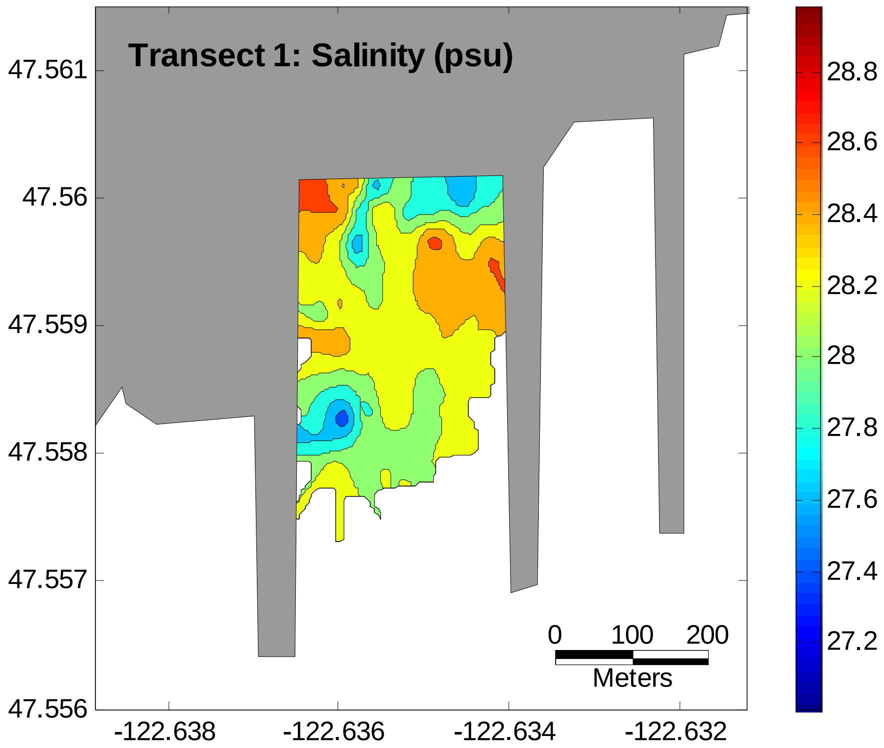
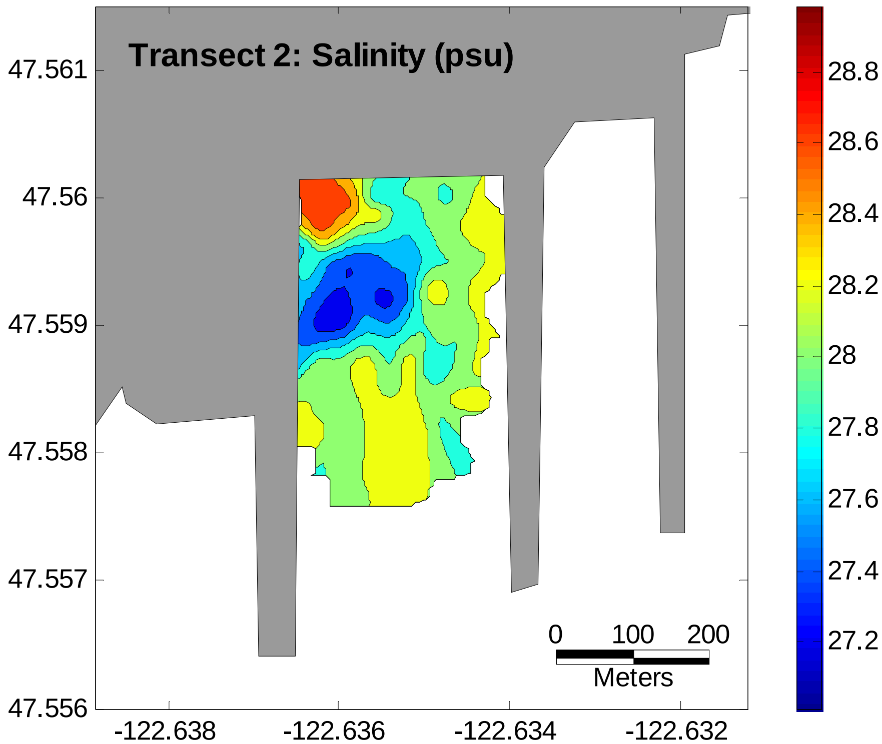

Transect 1: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2


Transect 2: Salinity (psu)
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47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
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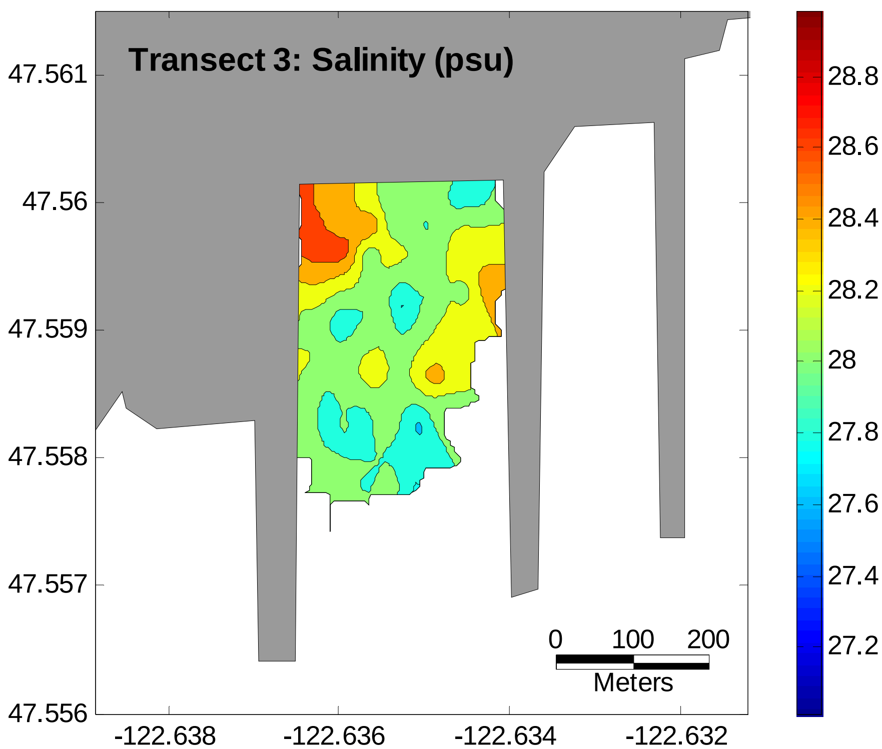
Transect 3: Salinity (psu)
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-122.636
-122.634
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Meters
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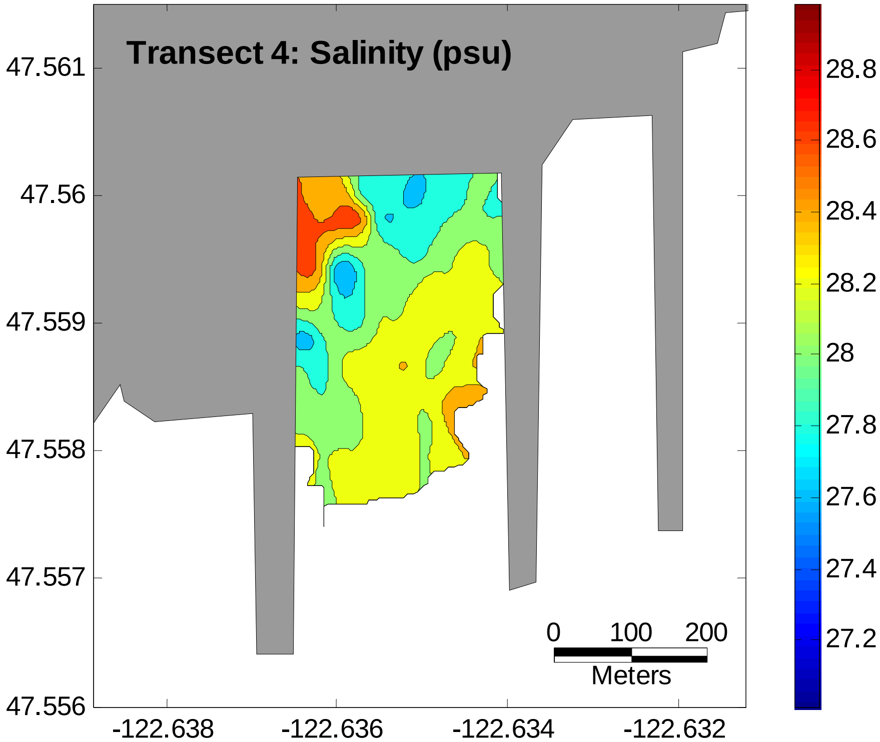
Transect 4: Salinity (psu)
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-122.636
-122.634
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Meters
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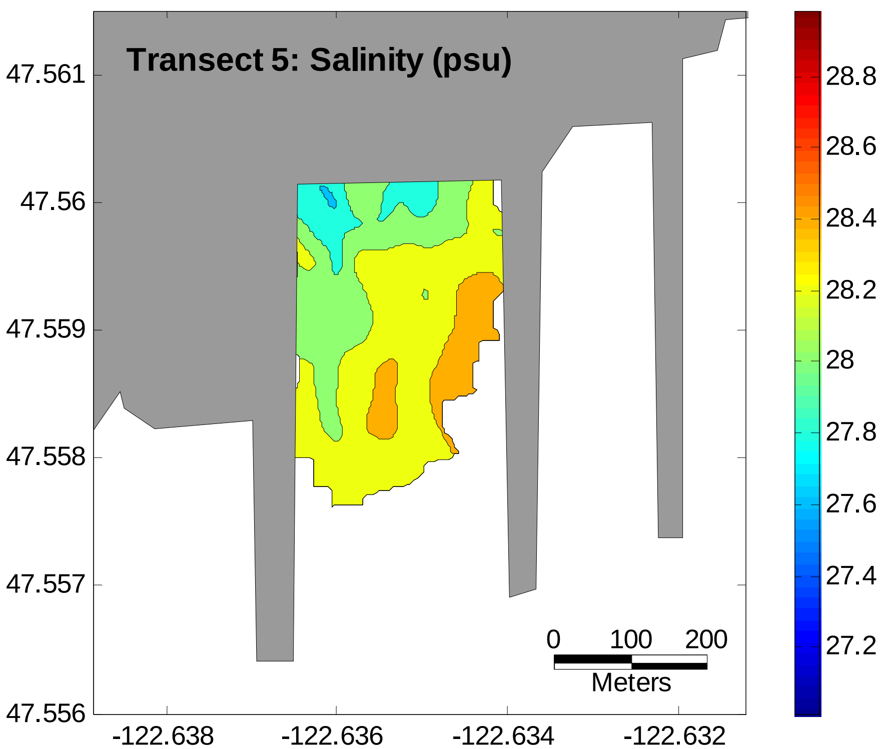
Transect 5: Salinity (psu)
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47.556
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-122.636
-122.634
-122.632
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Meters
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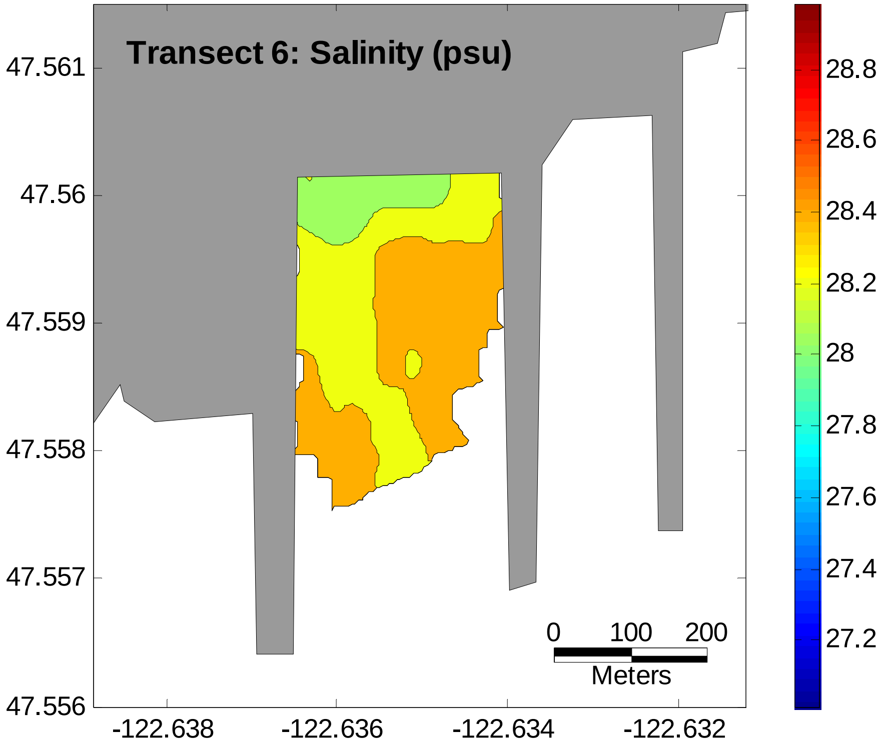
27.2


Transect 6: Salinity (psu)
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-122.634
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Meters
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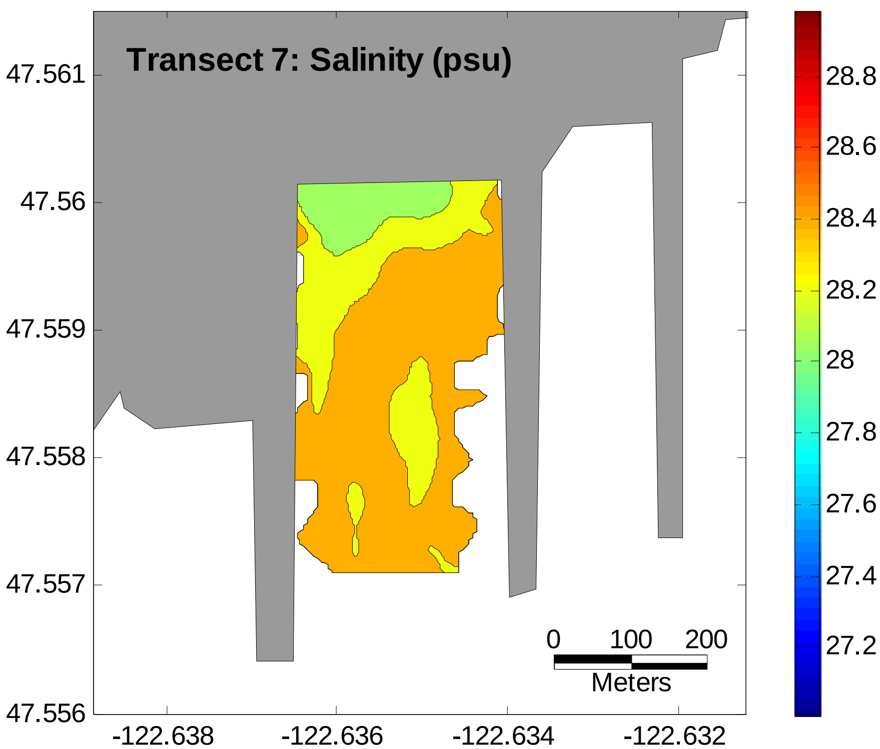
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Meters
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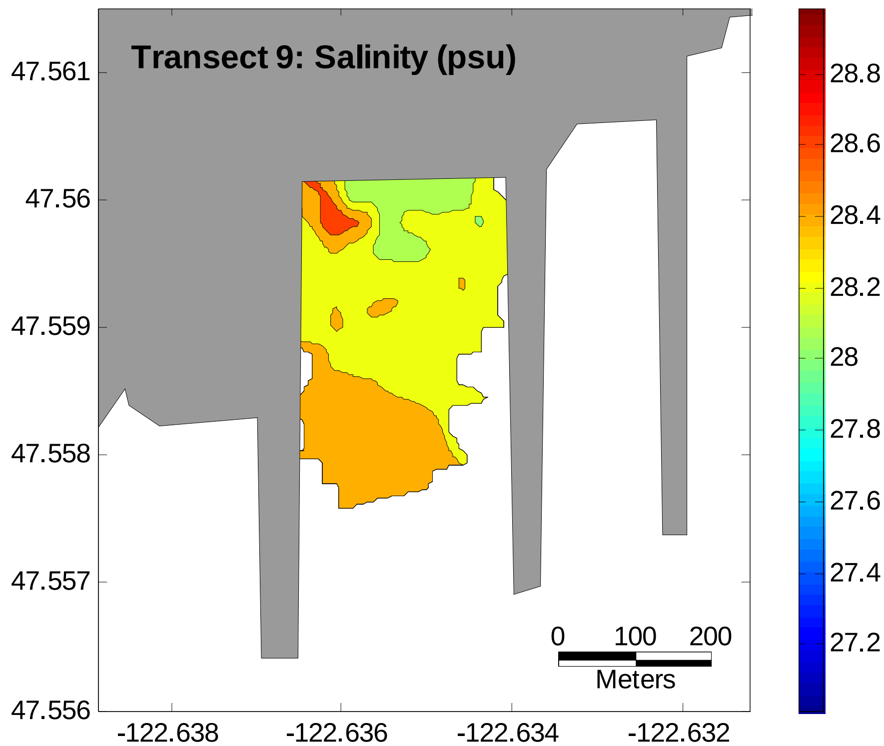
Transect 9: Salinity (psu)
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-122.636
-122.634
-122.632
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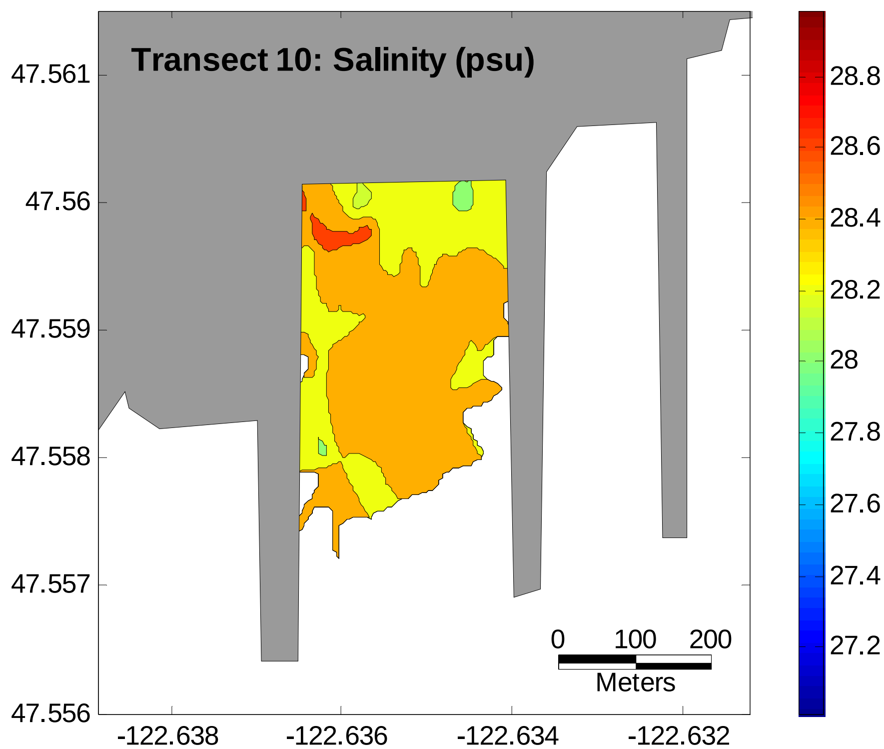
Transect 10: Salinity (psu)
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-122.636
-122.634
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Meters
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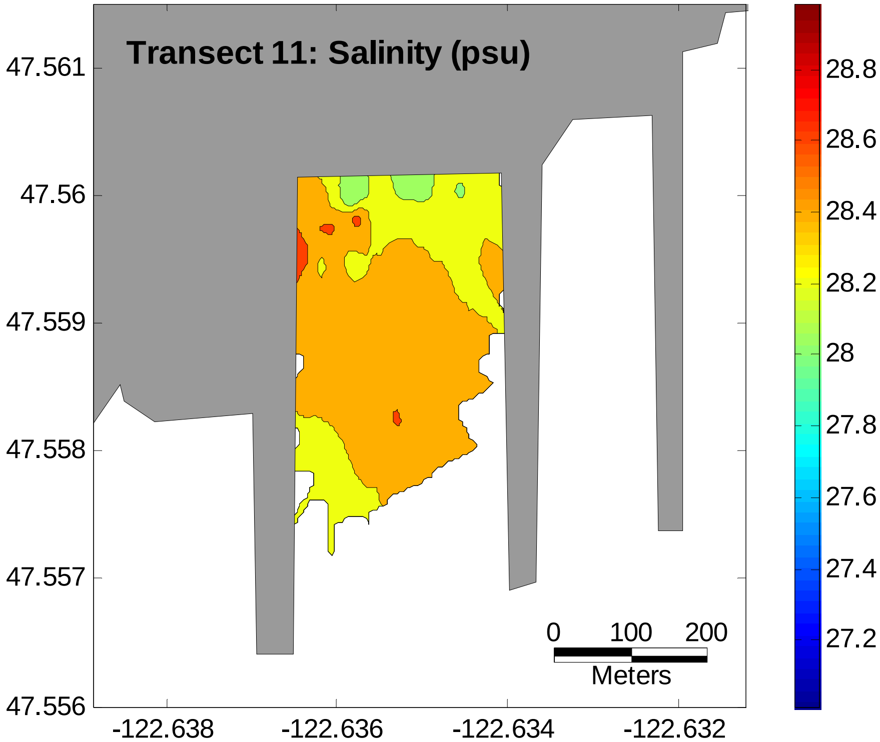
Transect 11: Salinity (psu)
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Meters
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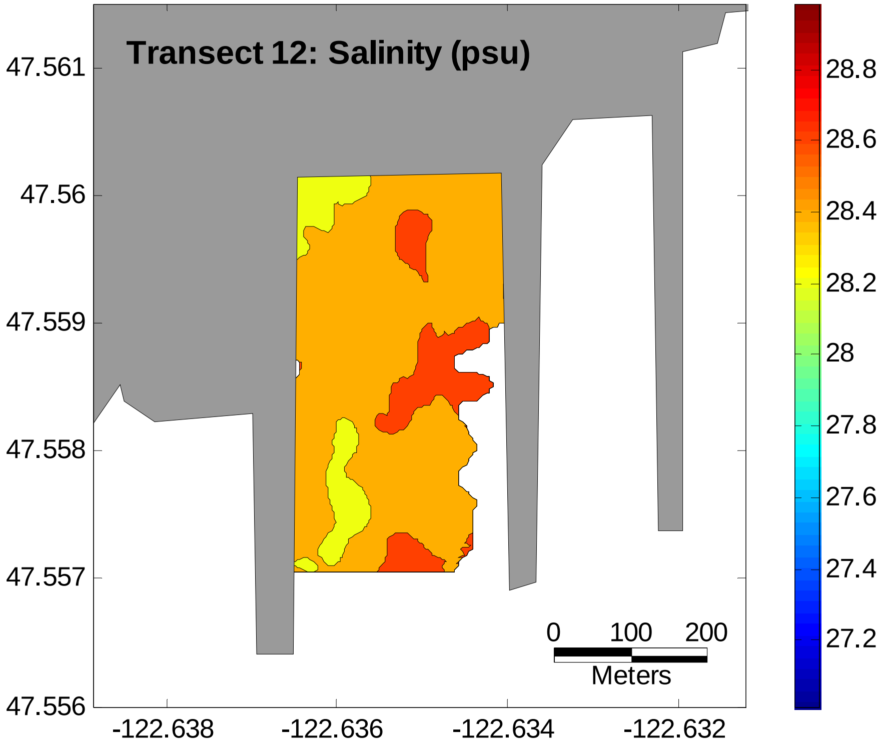
Transect 12: Salinity (psu)
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-122.634
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Meters
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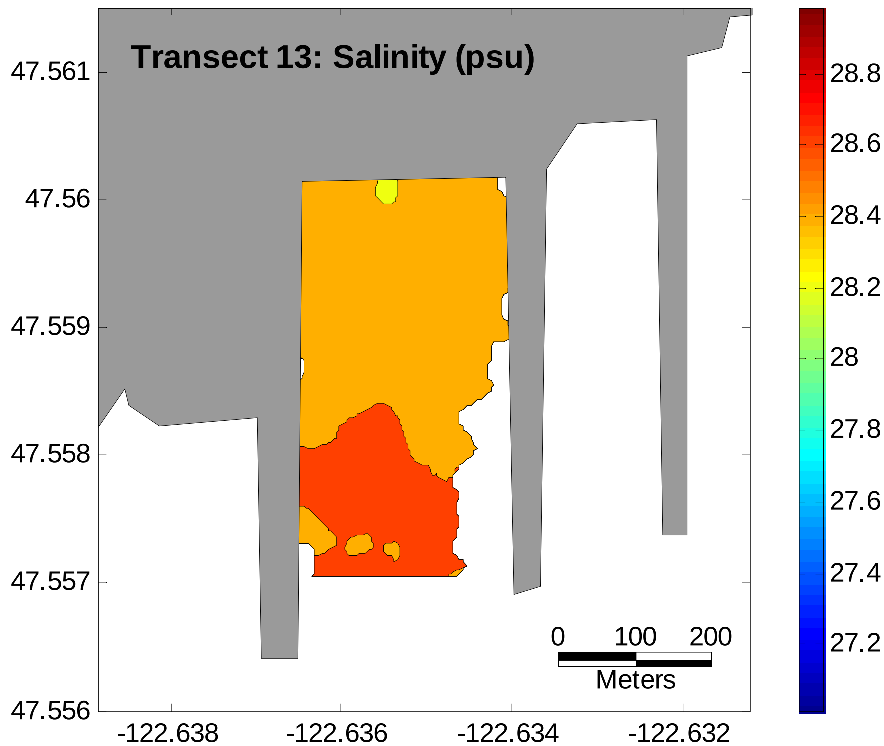
Transect 13: Salinity (psu)
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-122.636
-122.634
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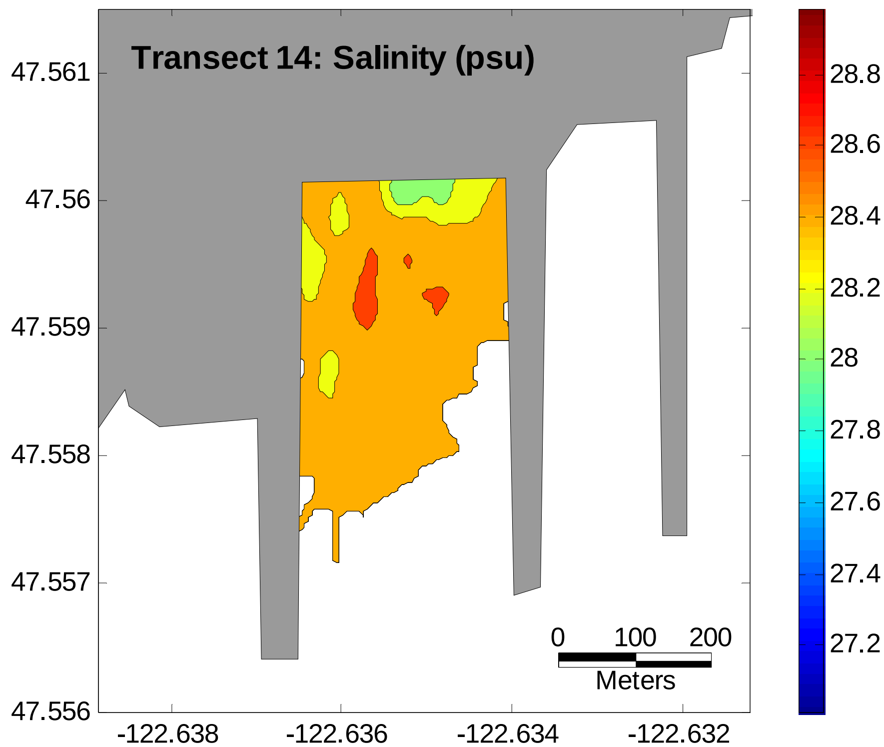
27.2


Transect 14: Salinity (psu)
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47.556
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-122.636
-122.634
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Meters
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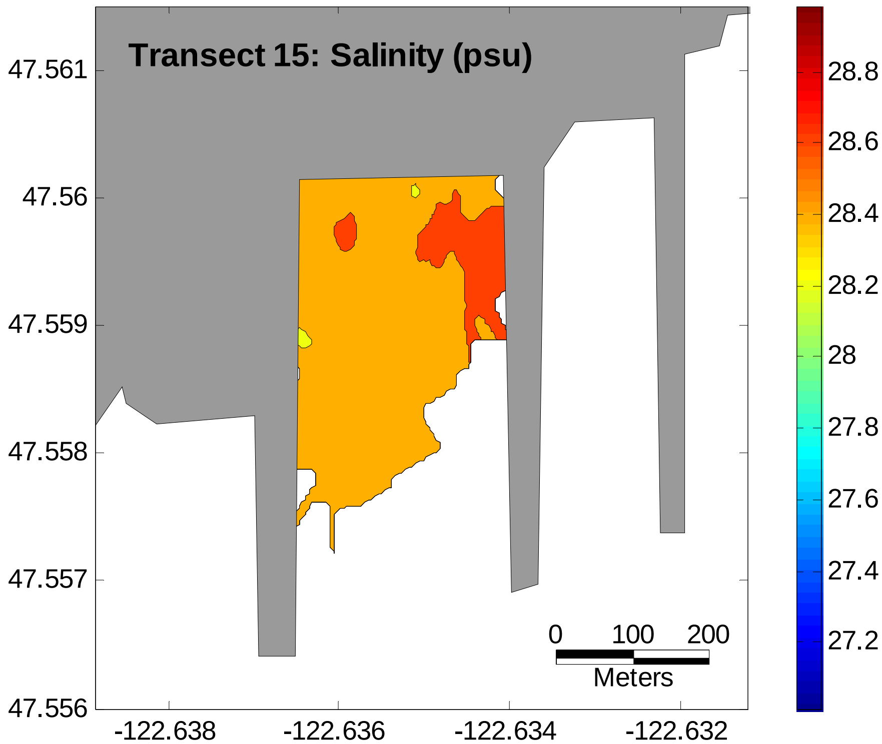
Transect 15: Salinity (psu)
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Meters
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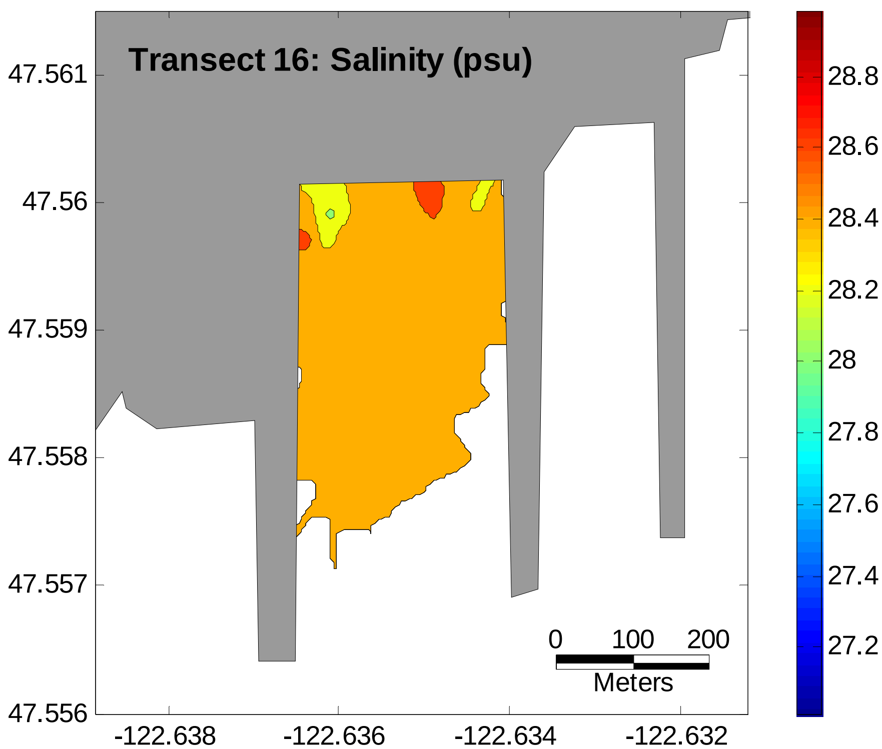
Transect 16: Salinity (psu)
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47.557
47.556
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-122.636
-122.634
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Meters
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27.4
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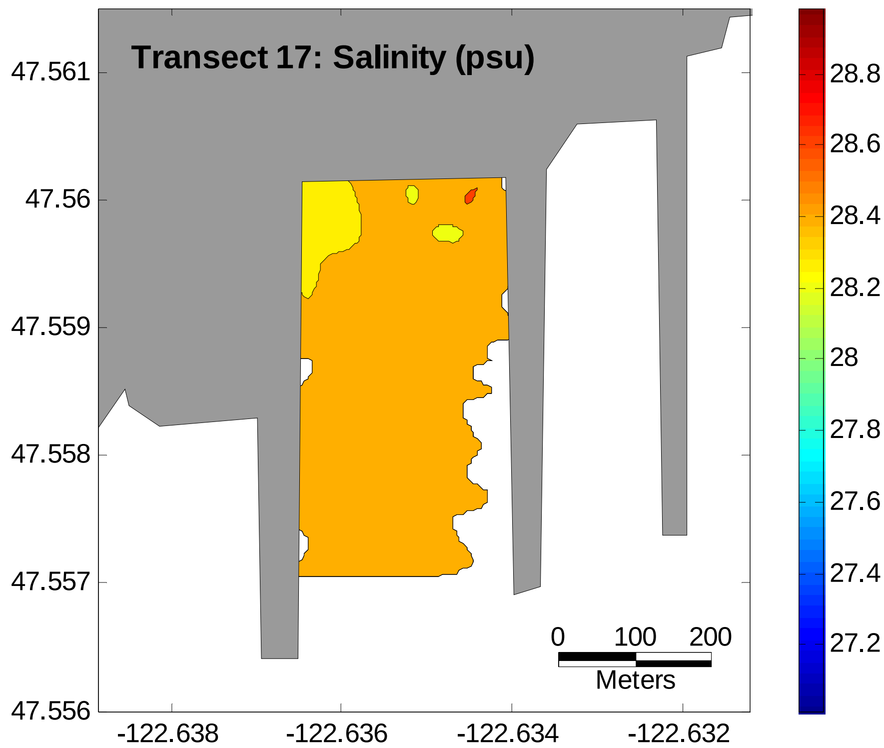

Transect 17: Salinity (psu)
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47.559
47.558
47.557
47.556
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-122.636
-122.634
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27.8
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27.4
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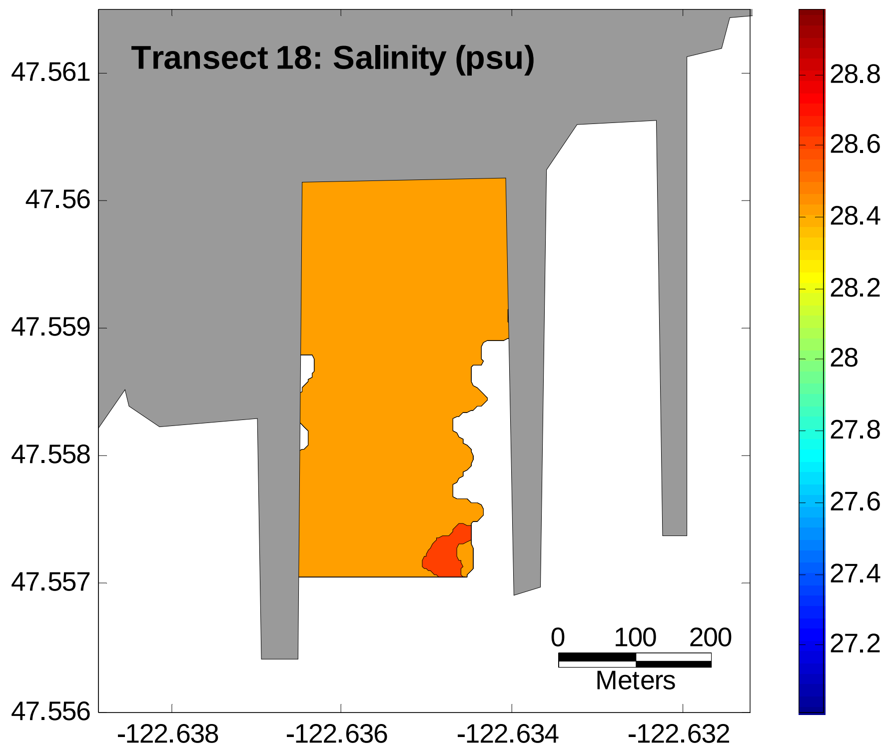

Transect 18: Salinity (psu)
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47.557
47.556
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-122.636
-122.634
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Meters
28.8
28.6
28.4
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27.4
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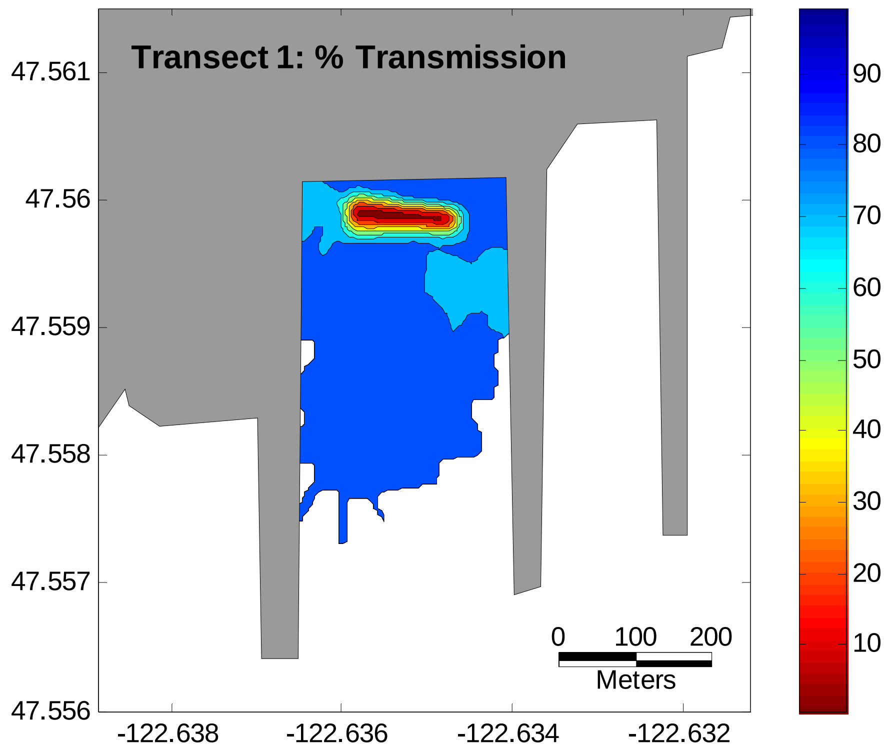
Transect 1: % Transmission
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47.557
47.556
-122.638
-122.636
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-122.632
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Meters
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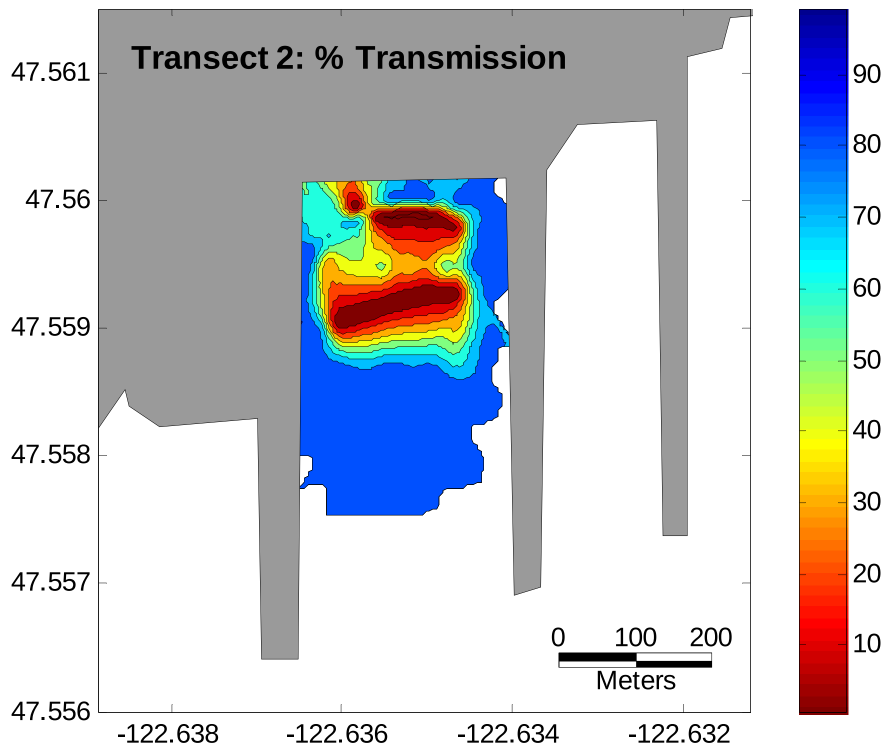
Transect 2: % Transmission
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47.558
47.557
47.556
-122.638
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-122.632
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Meters
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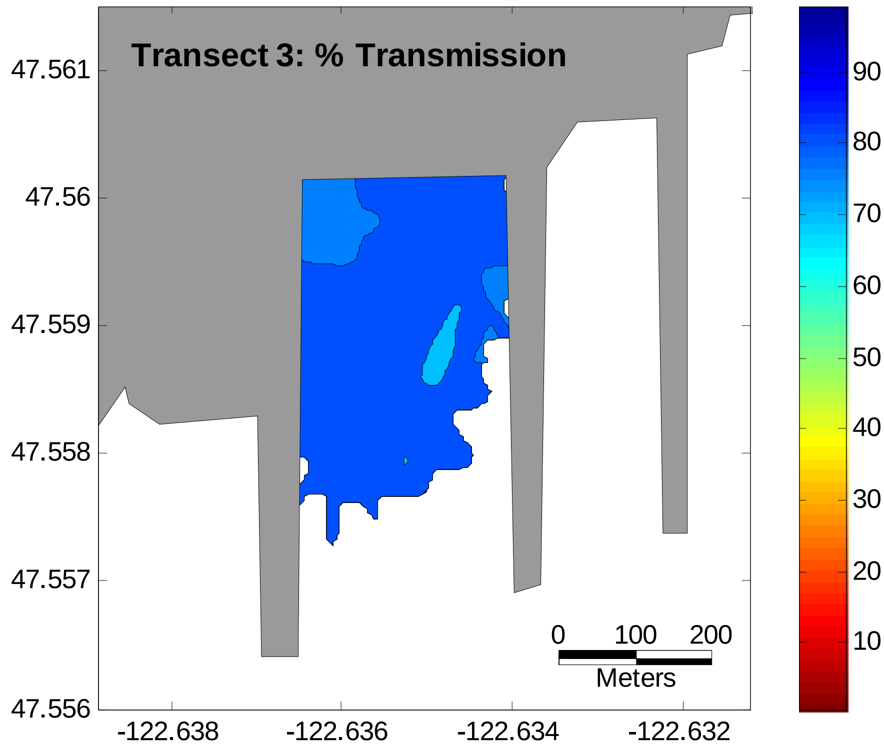
Transect 3: % Transmission
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47.558
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47.556
-122.638
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Meters
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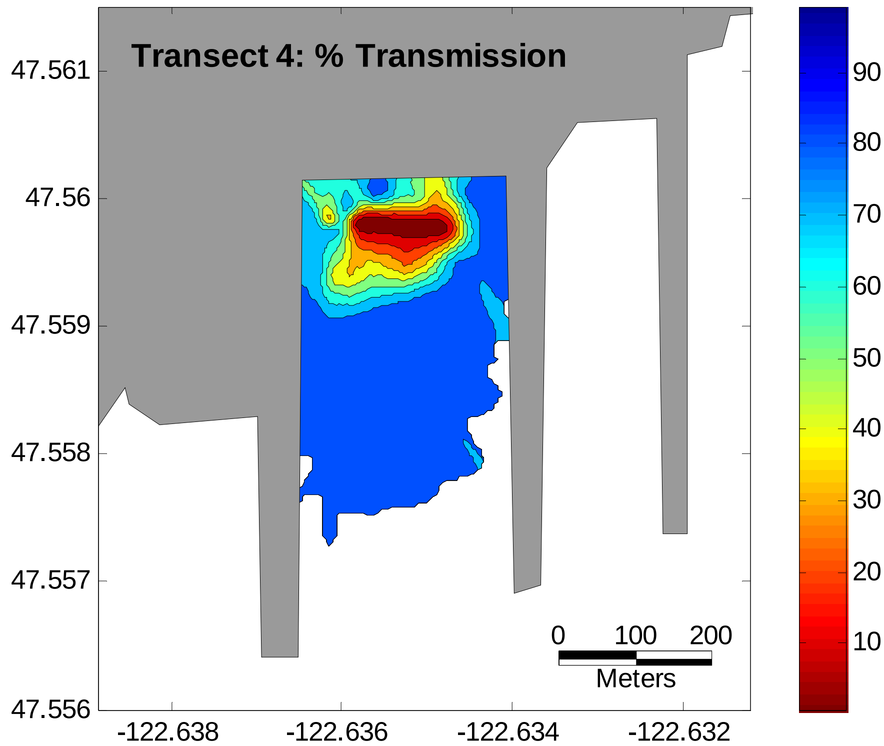
Transect 4: % Transmission
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-122.632
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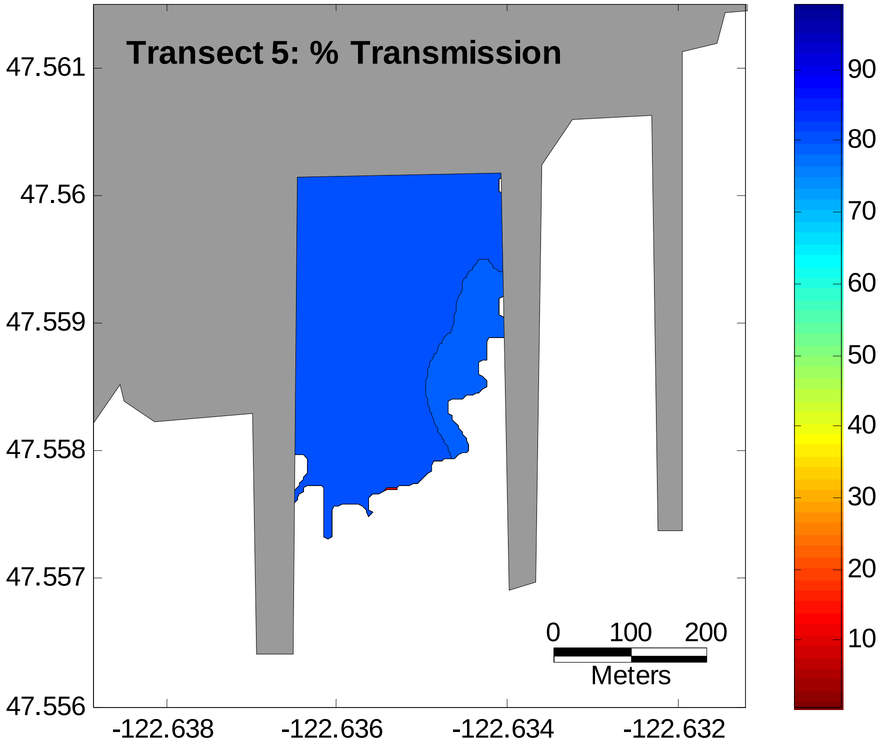
Transect 5: % Transmission
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47.556
-122.638
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-122.632
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Meters
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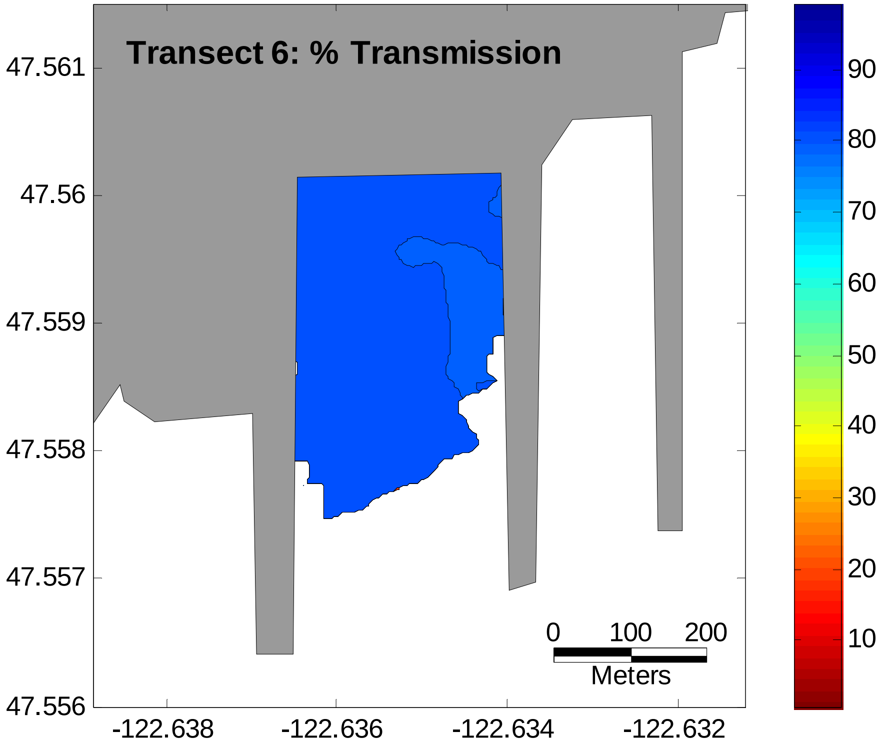
Transect 6: % Transmission
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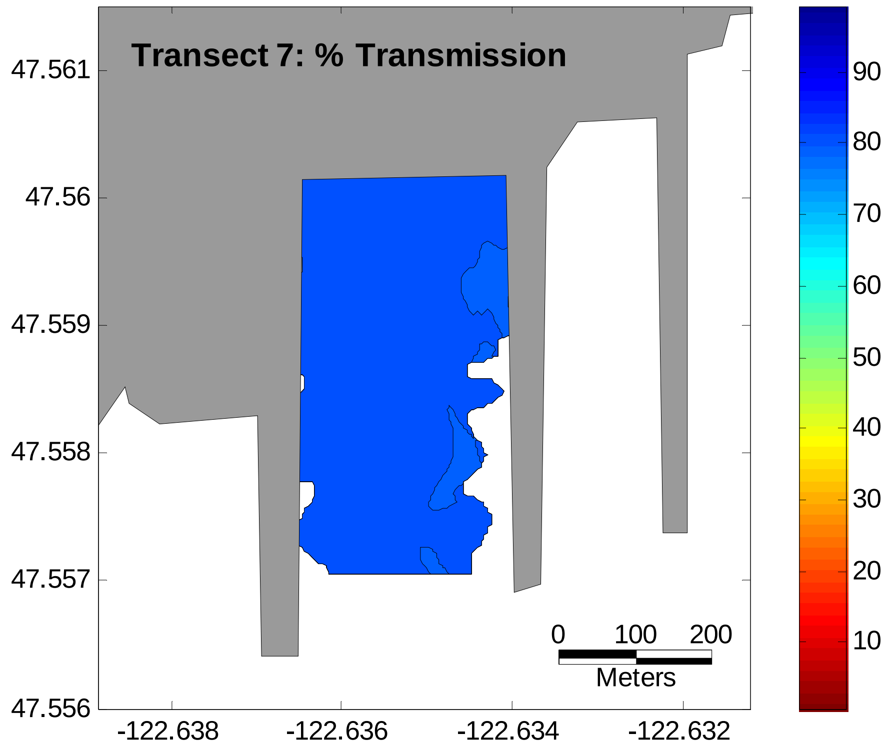

Transcect 7: % Transmission
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Meters
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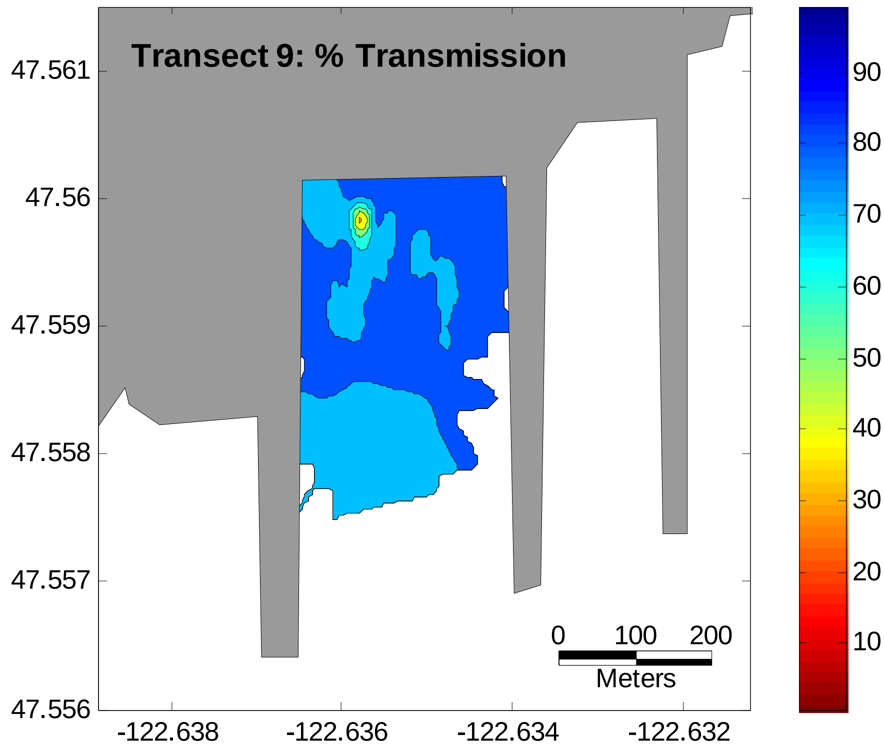

Transect 9: % Transmission
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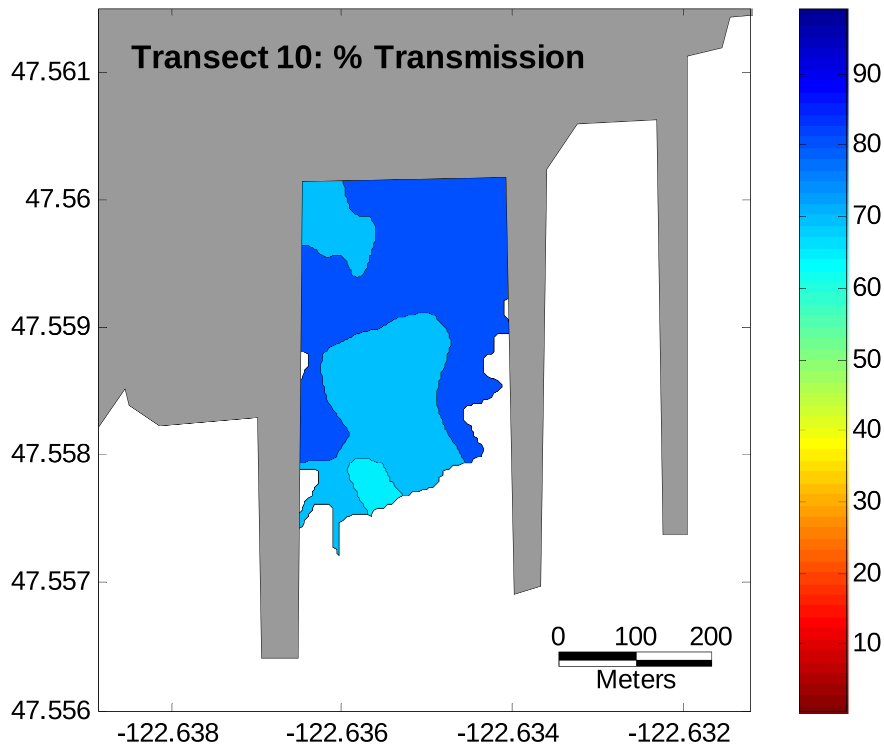
Transect 10: % Transmission
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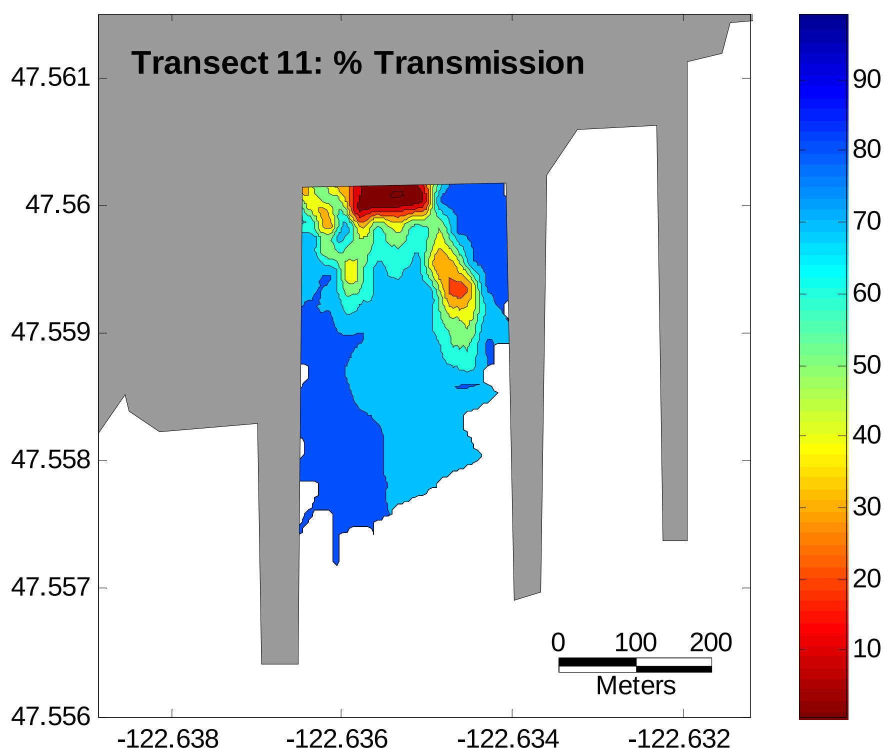
Transect 11: % Transmission
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47.557
47.556
-122.638
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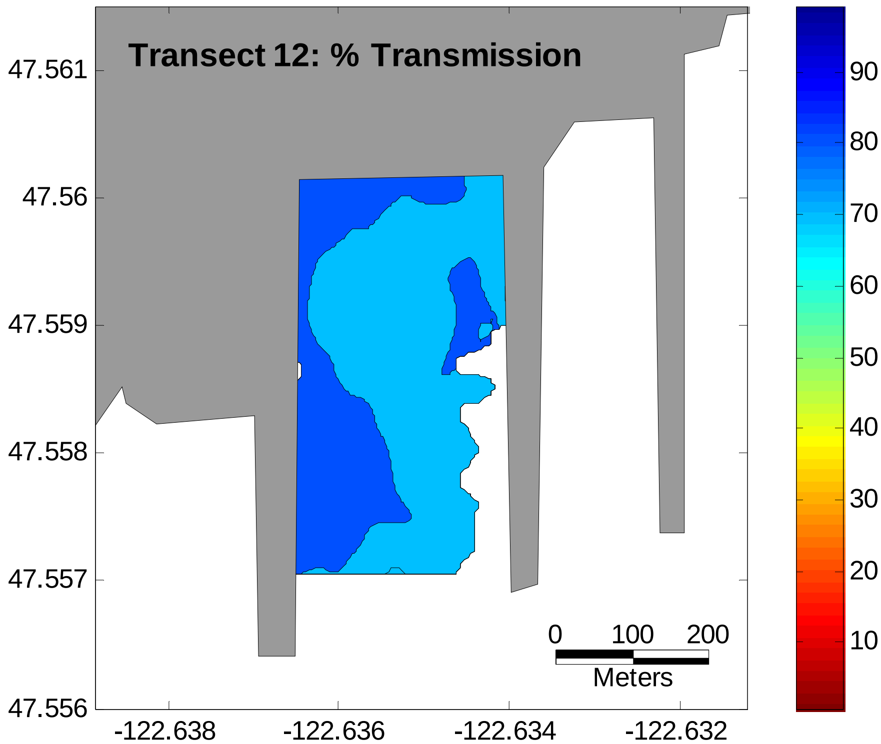
Transect 12: % Transmission
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47.556
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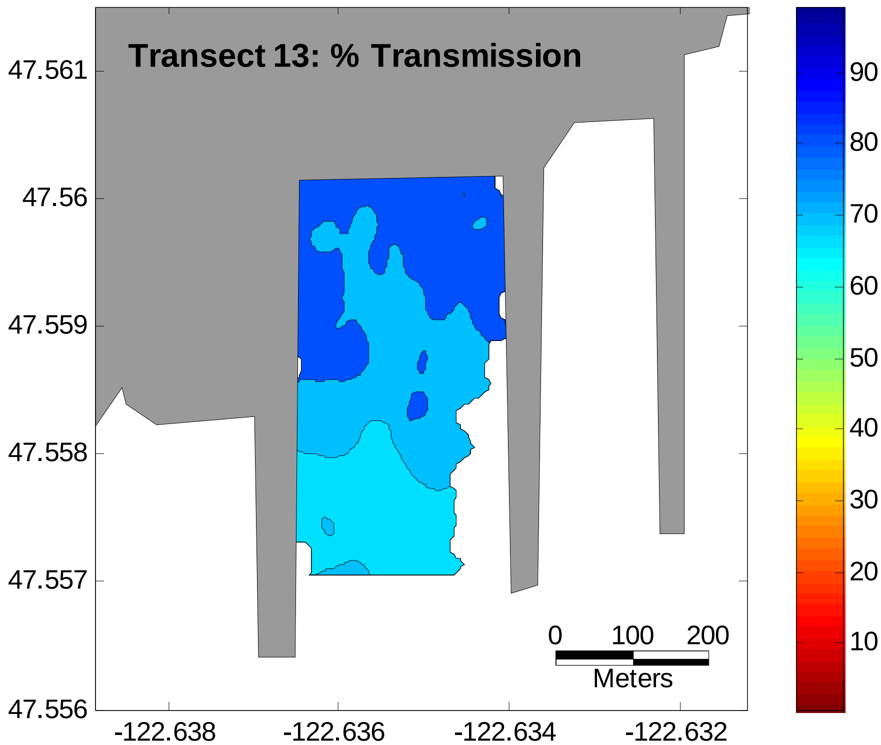
Transect 13: % Transmission
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Meters
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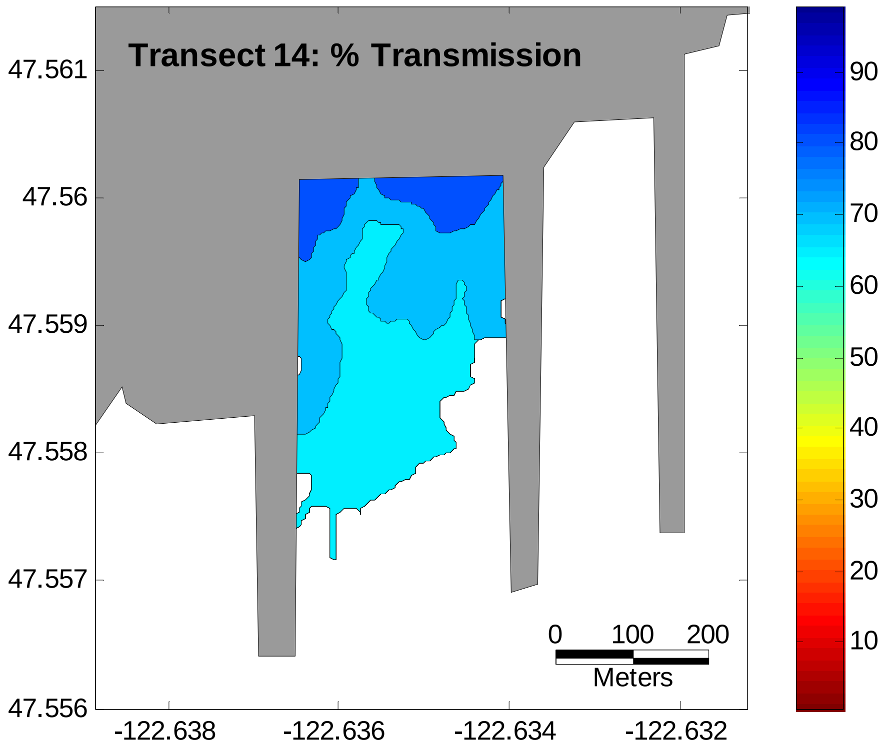

Transect 14: % Transmission
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47.556
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-122.634
-122.632
0 100 200
Meters
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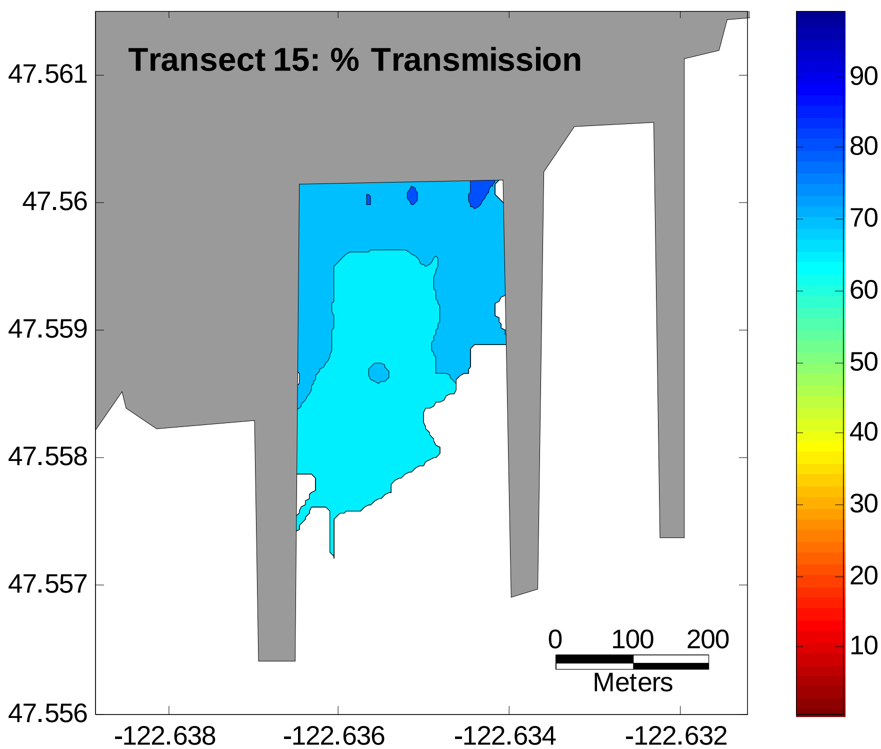

Transect 15: % Transmission
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47.557
47.556
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-122.634
-122.632
0 100 200
Meters
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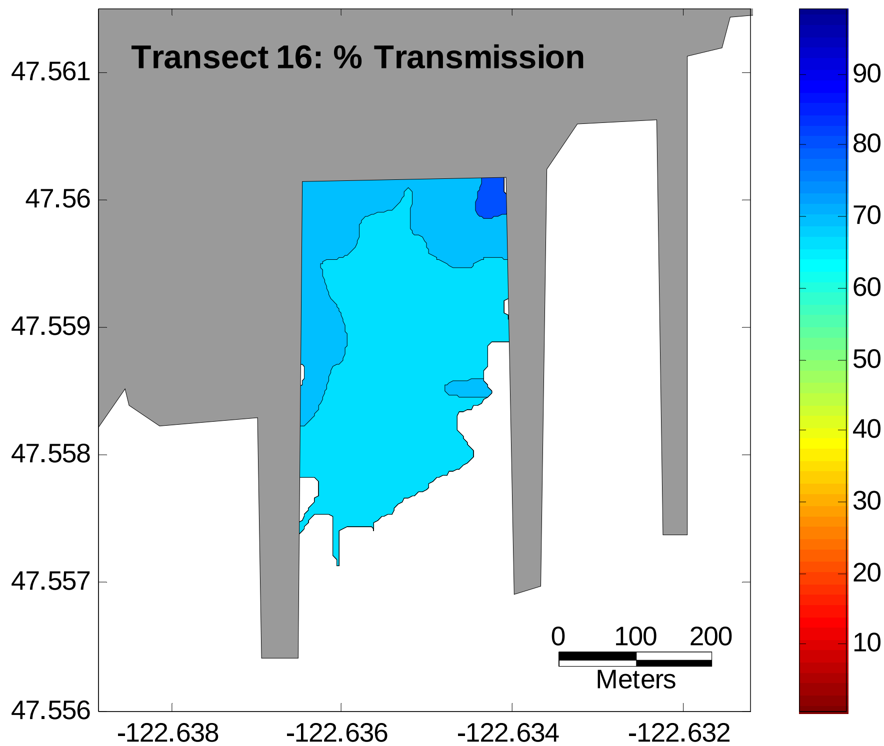
Transect 16: % Transmission
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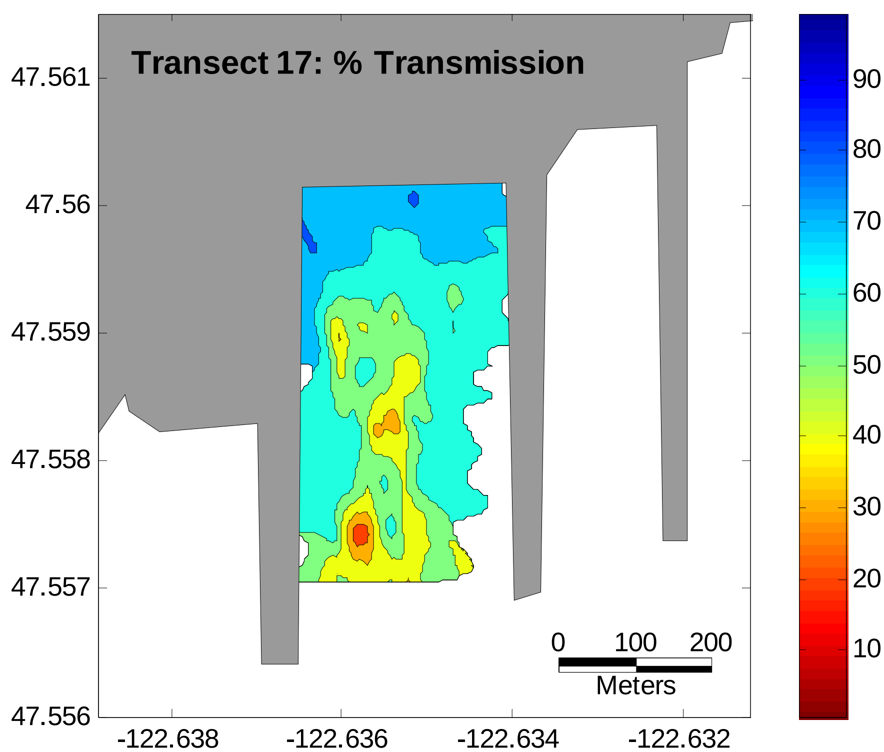
Transect 17: % Transmission
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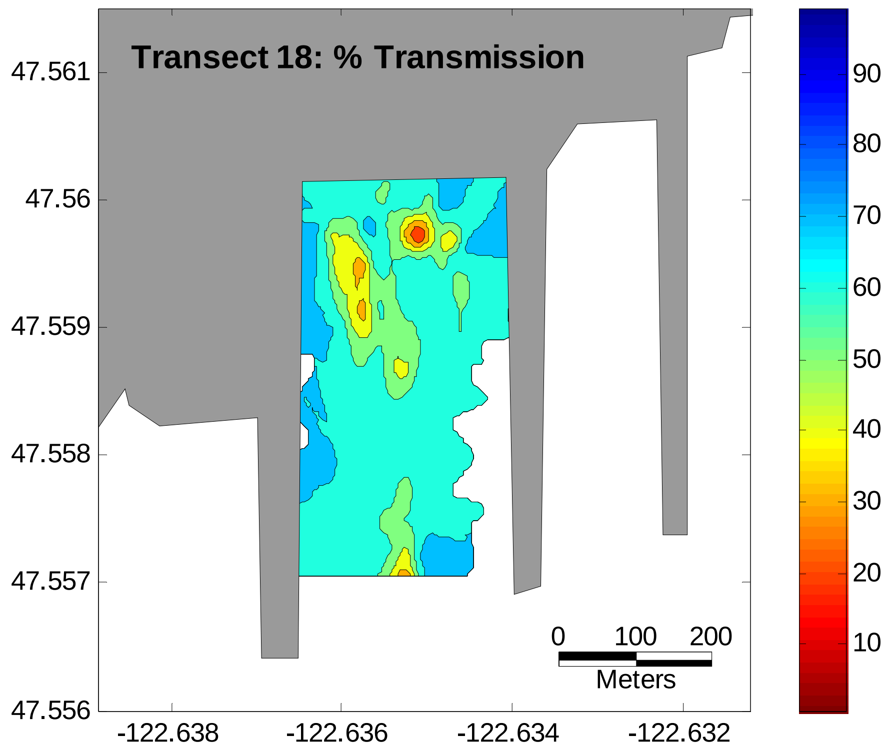
Transect 18: % Transmission
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Meters
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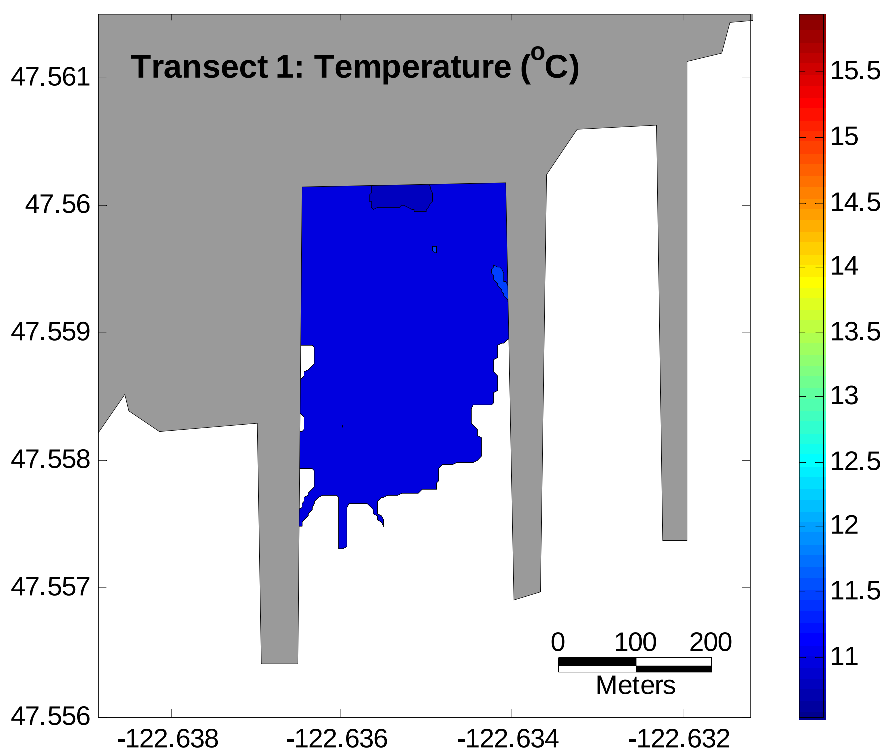
Transect 1: Temperature (^{o}C)
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47.557
47.556
-122.638
-122.636
-122.634
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200
Meters
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13.5
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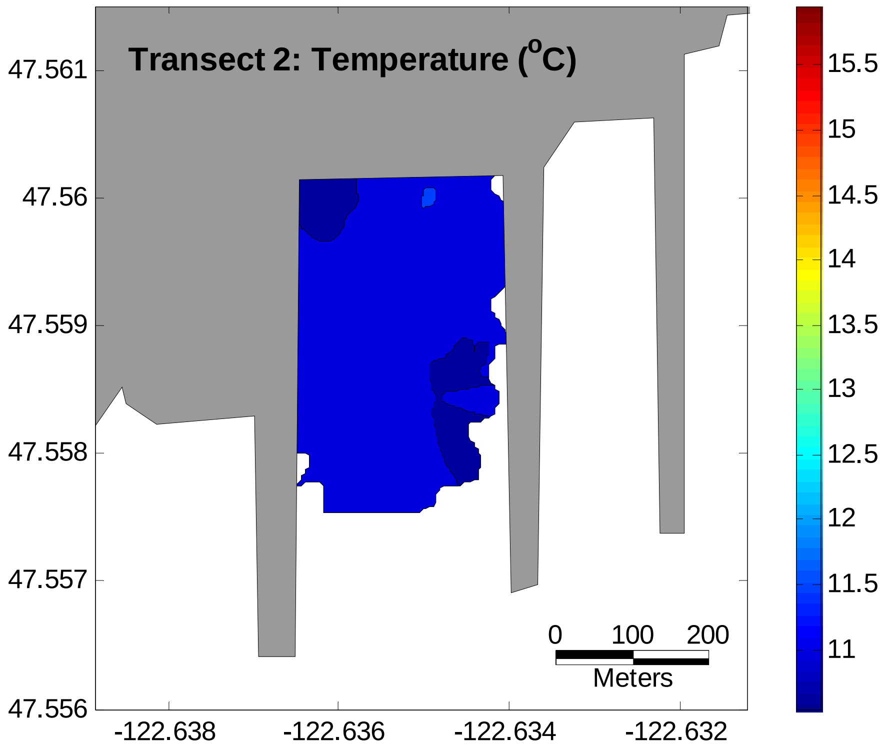
11



Transect 2: Temperature (^{o}C)
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47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
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14.5
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13.5
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12.5
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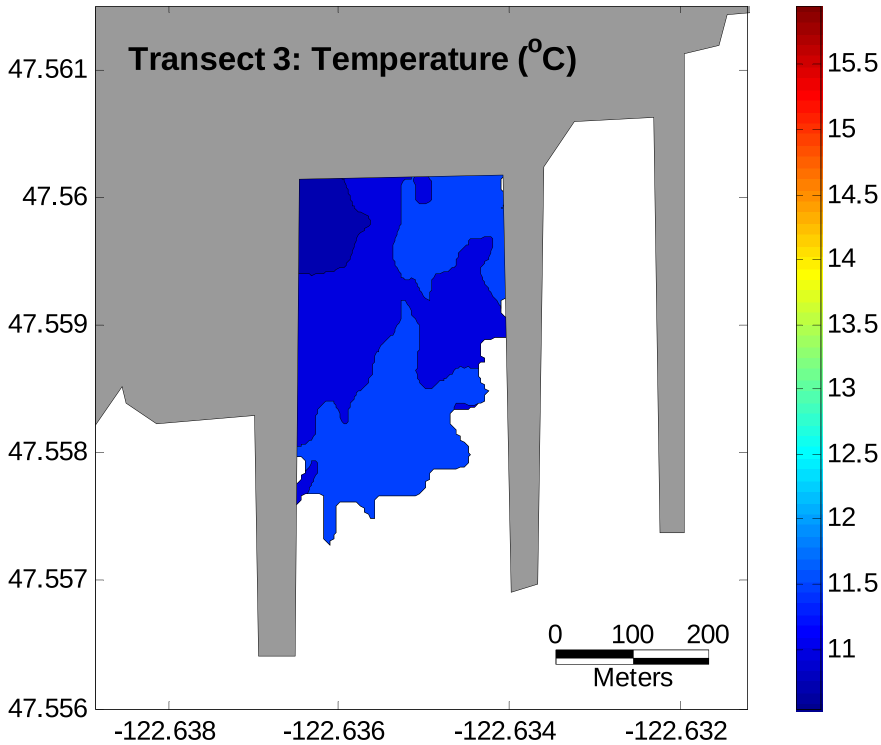
11.5
11



Transect 3: Temperature (^{o}C)
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-122.636
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Meters
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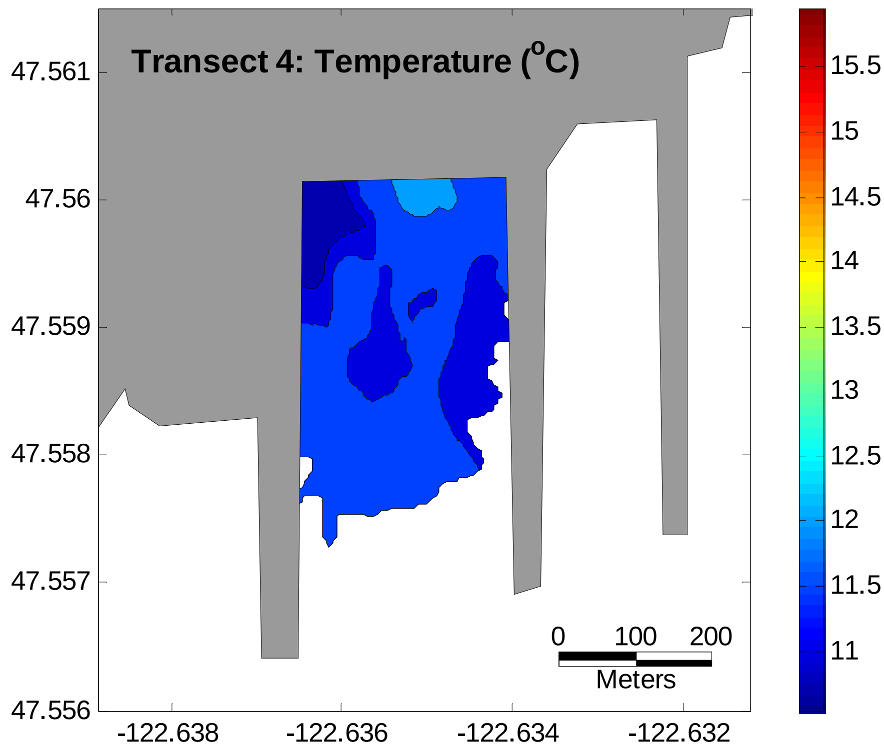
Transect 4: Temperature (^oC)
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-122.634
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Meters
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14.5
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13.5
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11.5
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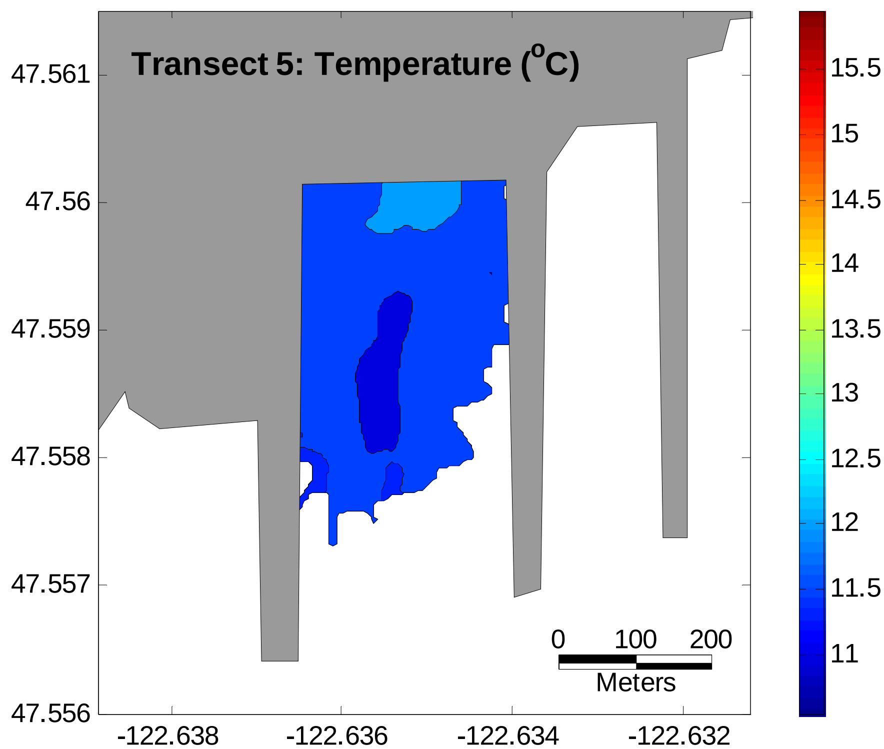
Transect 5: Temperature (^oC)
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47.557
47.556
-122.638
-122.636
-122.634
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200
Meters
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14.5
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13.5
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11.5
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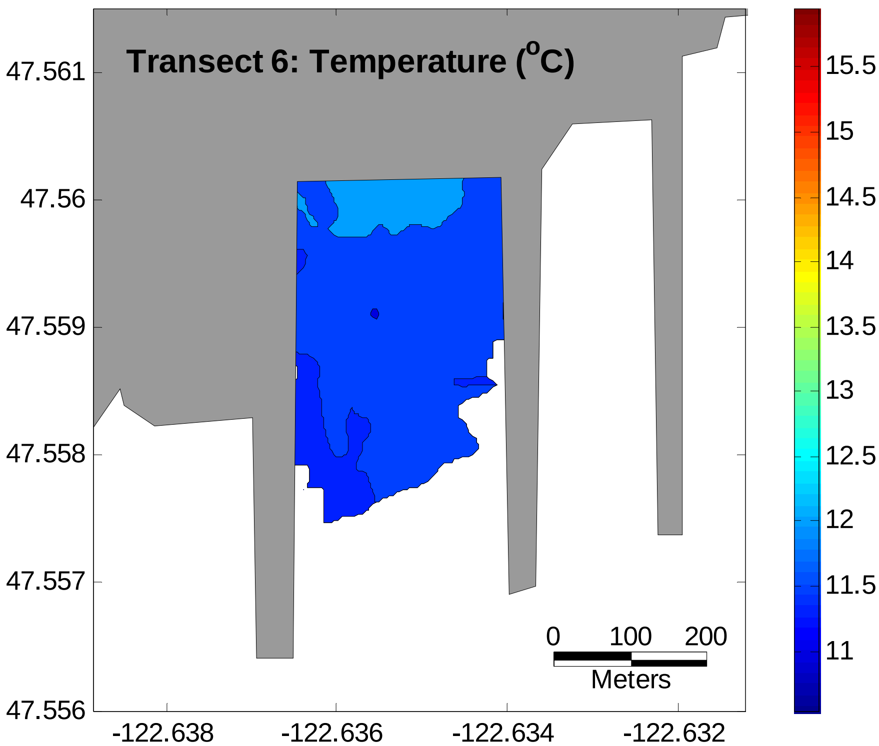
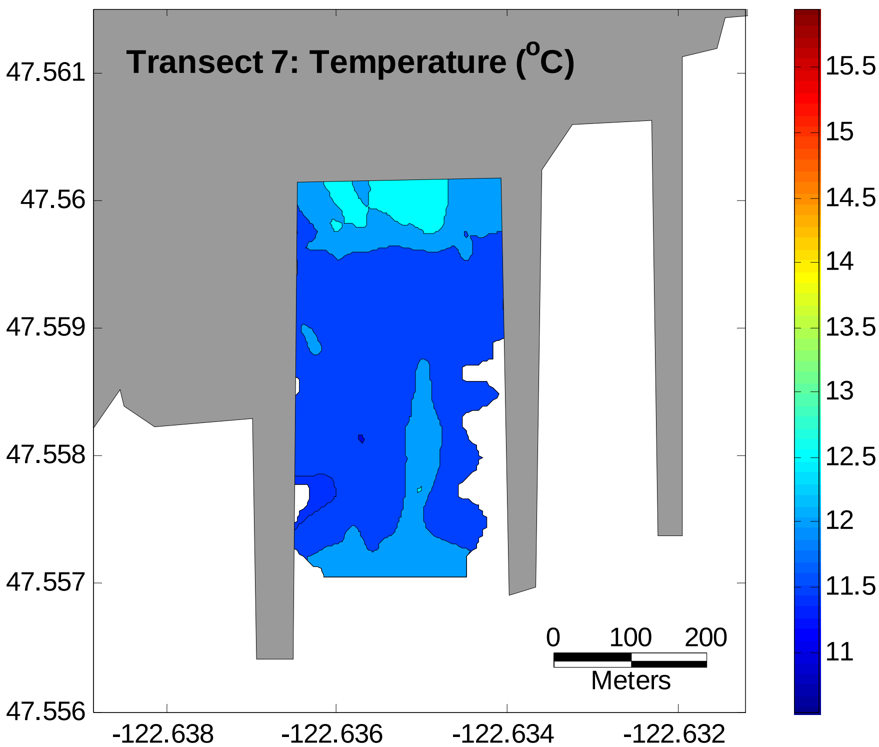
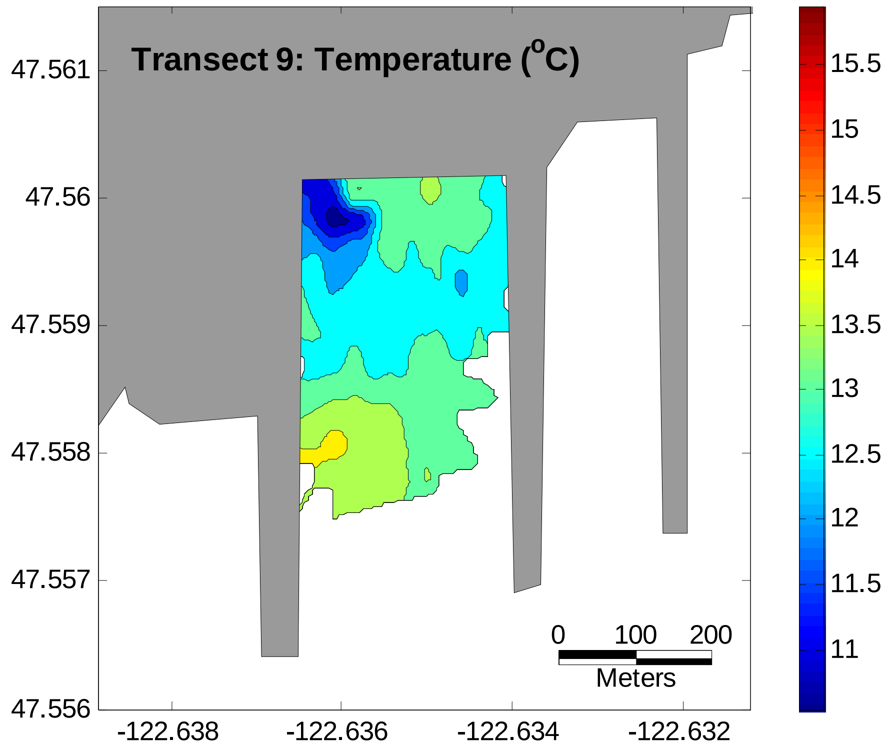
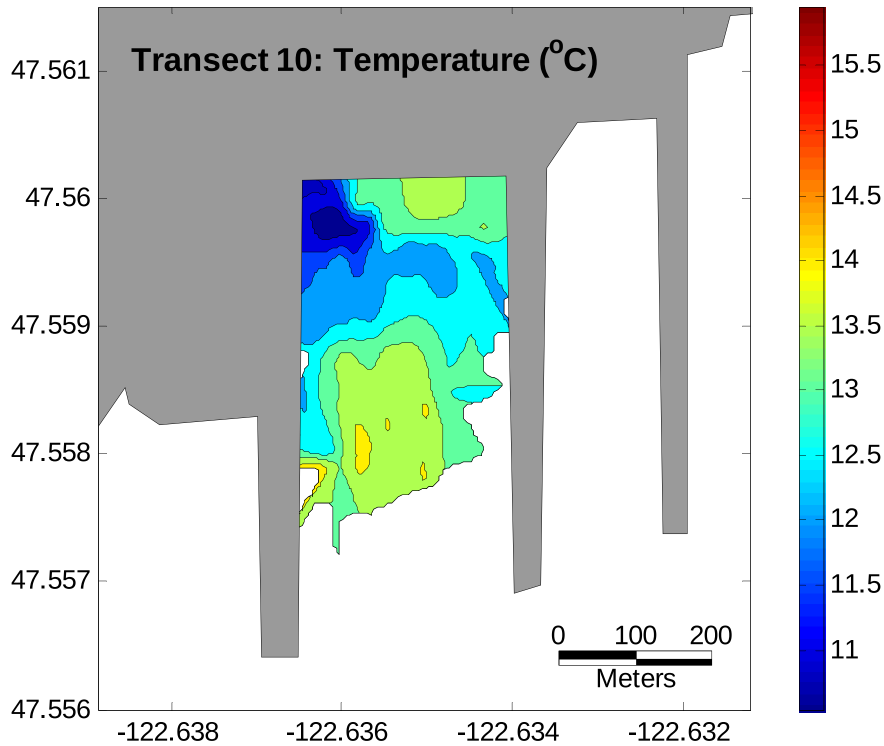

Transect 6: Temperature (°C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

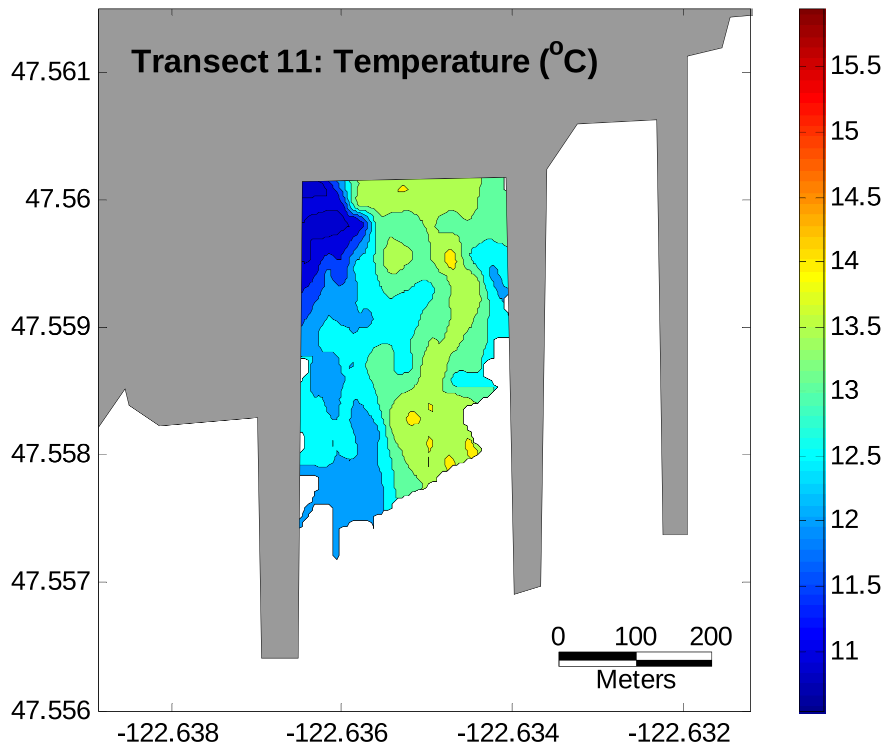

Transect 7: Temperature (°C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

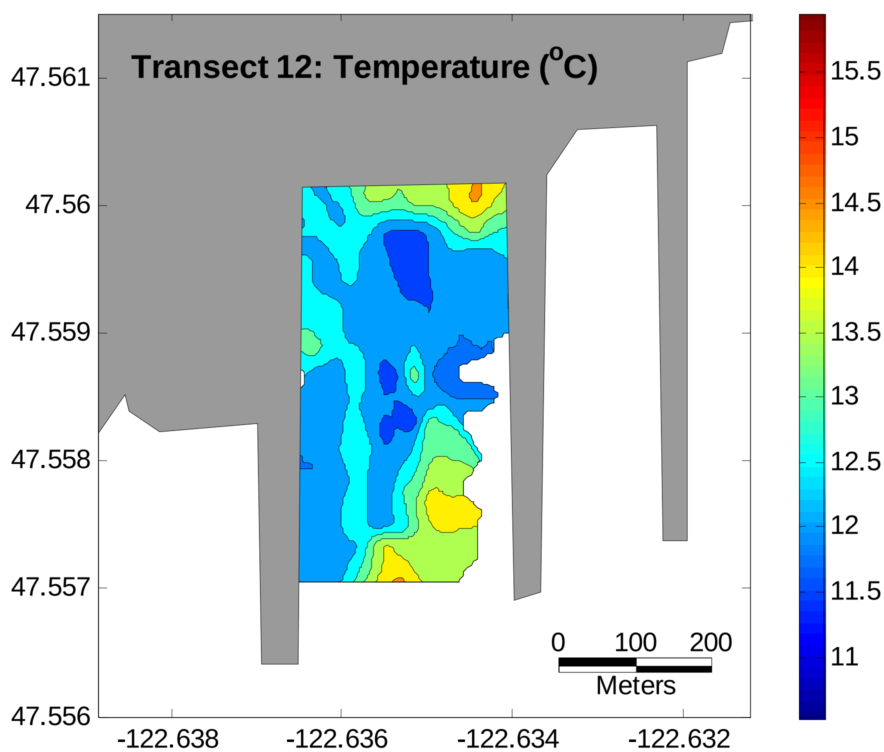


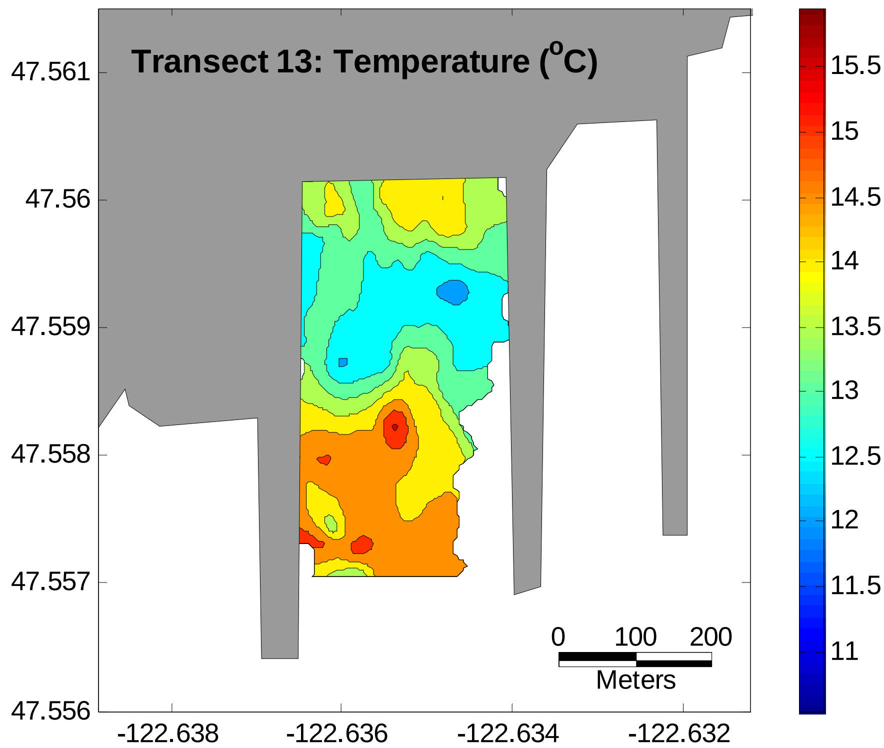
Transect 9: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

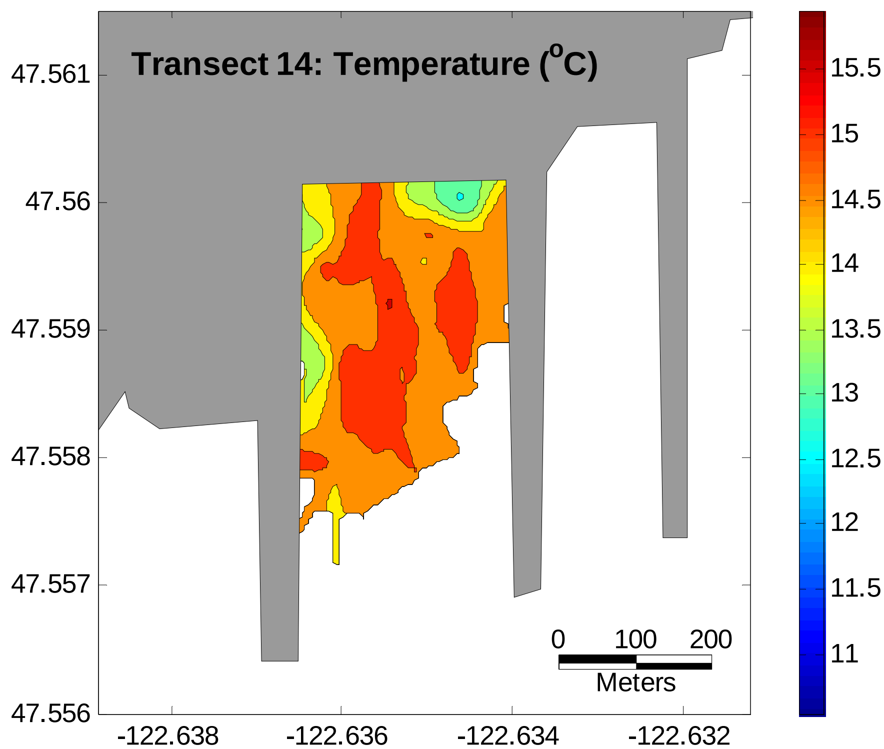


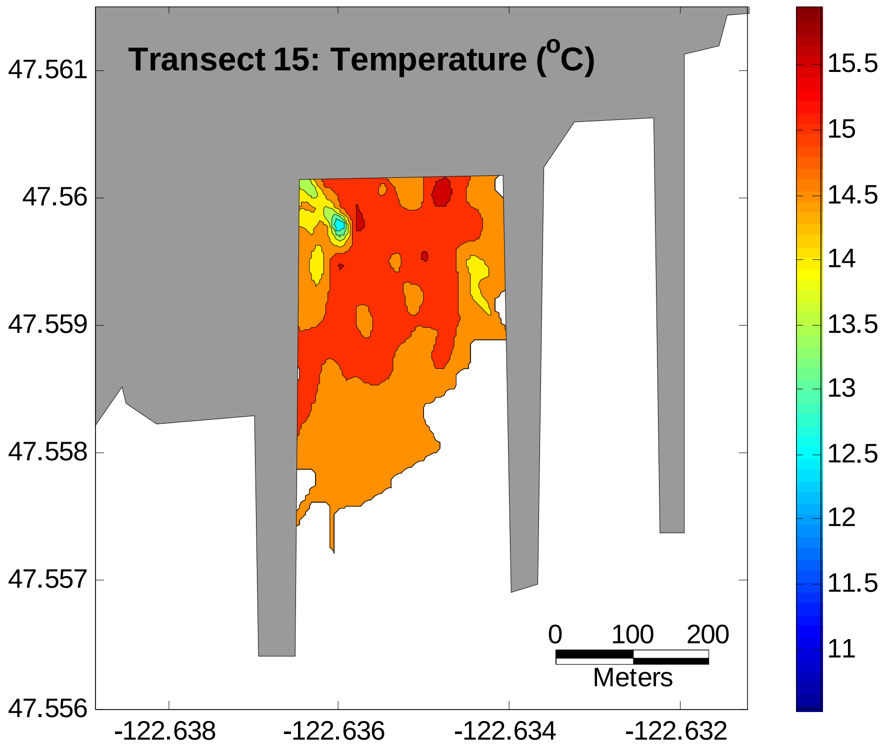
Transect 10: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11


Transect 11: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

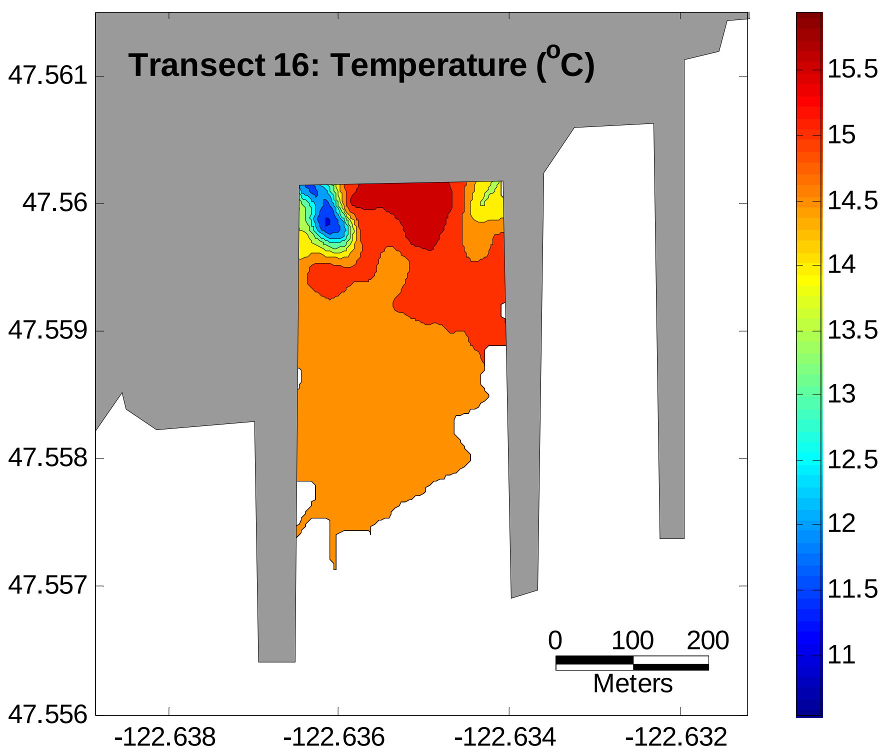

Transect 12: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11


Transect 13: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

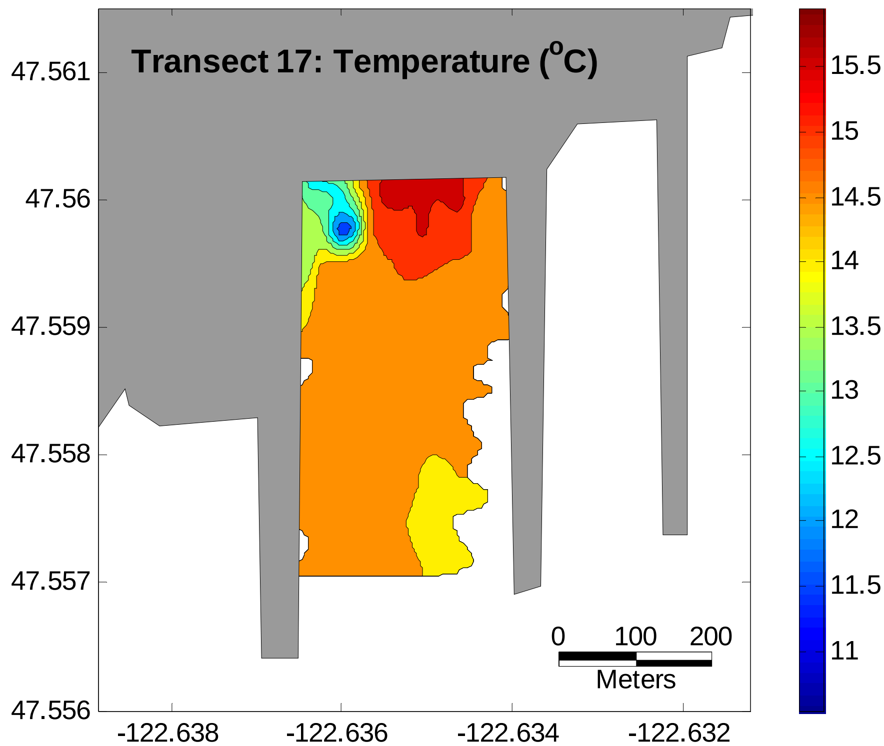

Transect 14: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

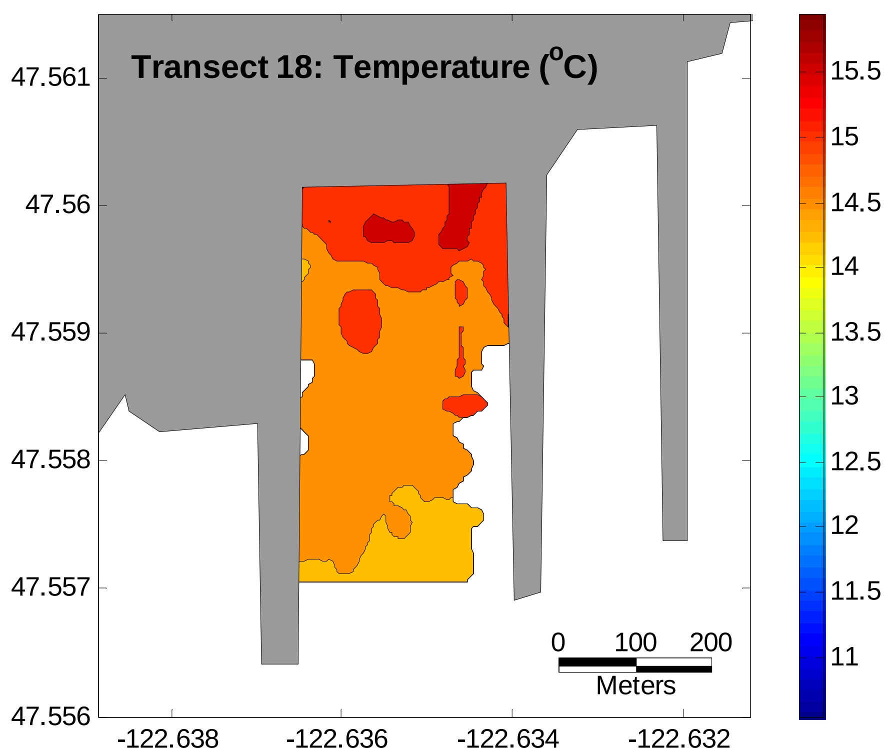


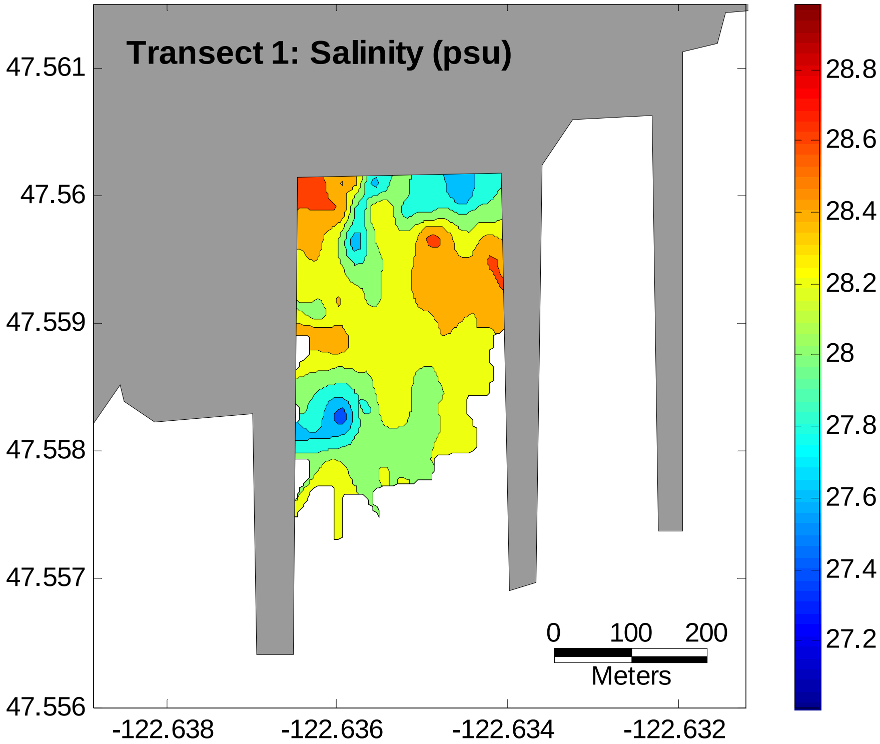
Transcect 15: Temperature (°C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

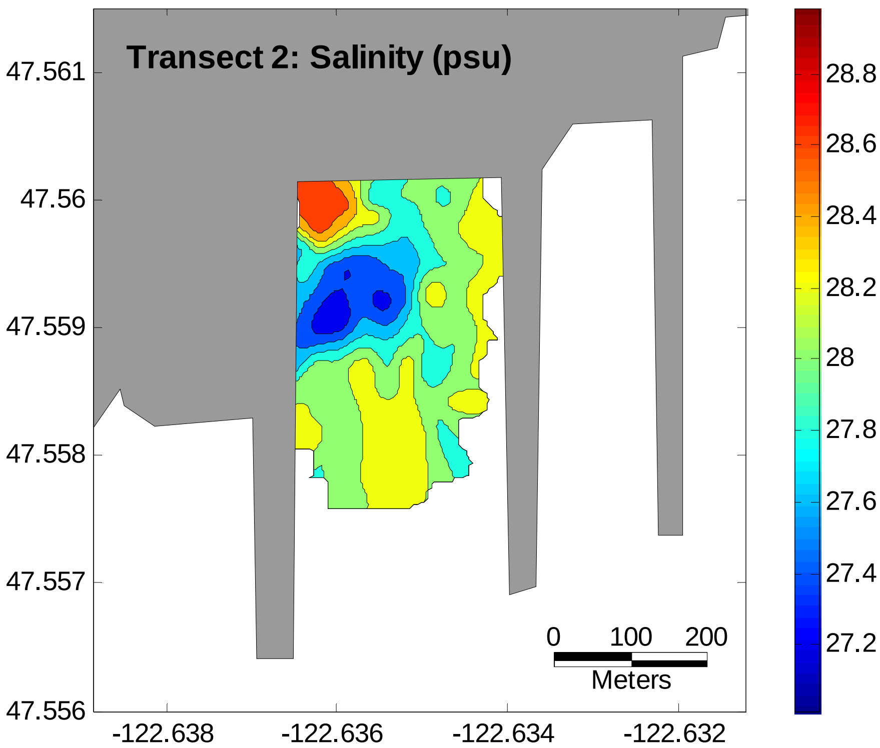


Transect 16: Temperature (°C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

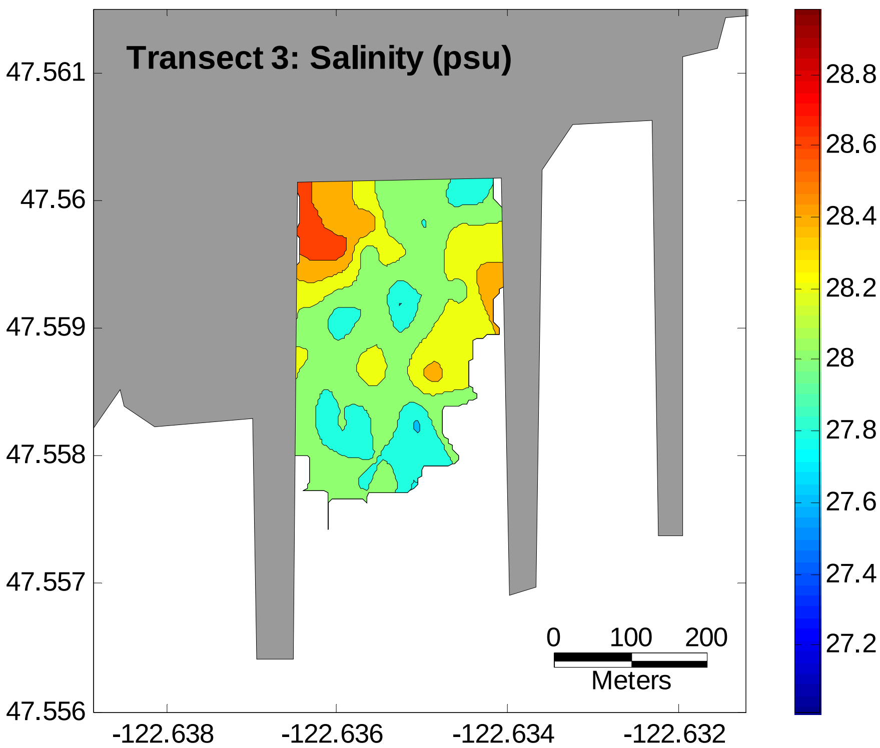

Transect 17: Temperature (^{o}C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11


Transect 18: Temperature (^{o}C)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
15.5
15
14.5
14
13.5
13
12.5
12
11.5
11

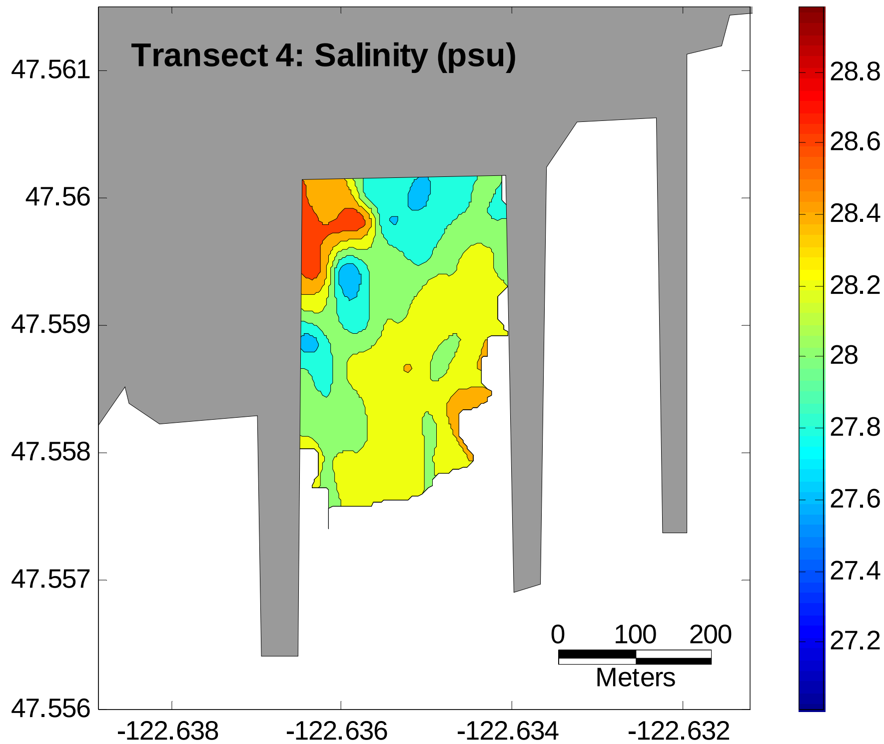

Transect 1: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

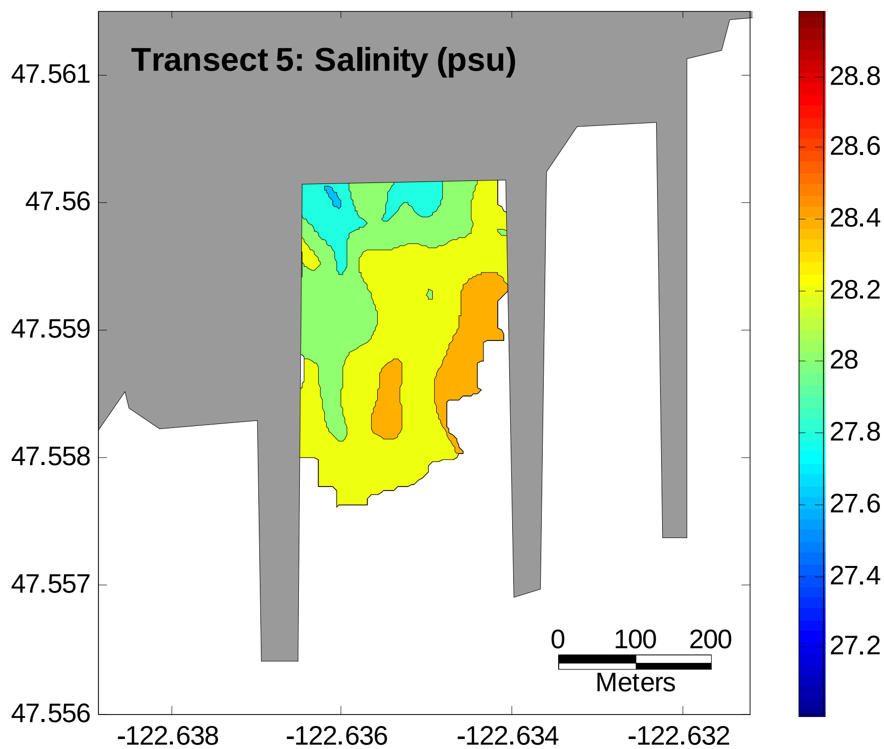


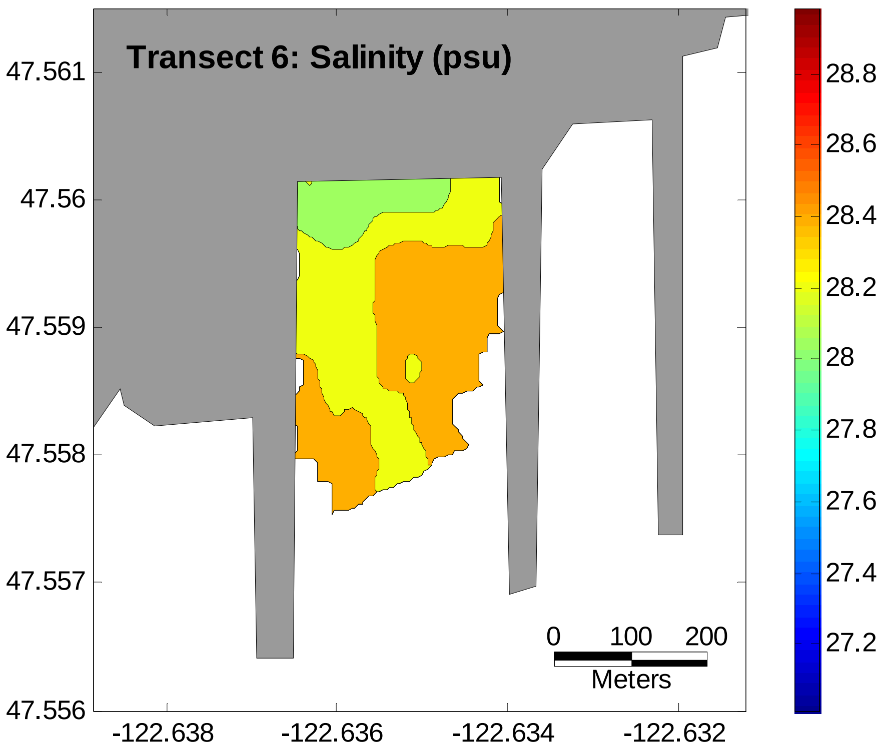
Transcect 2: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

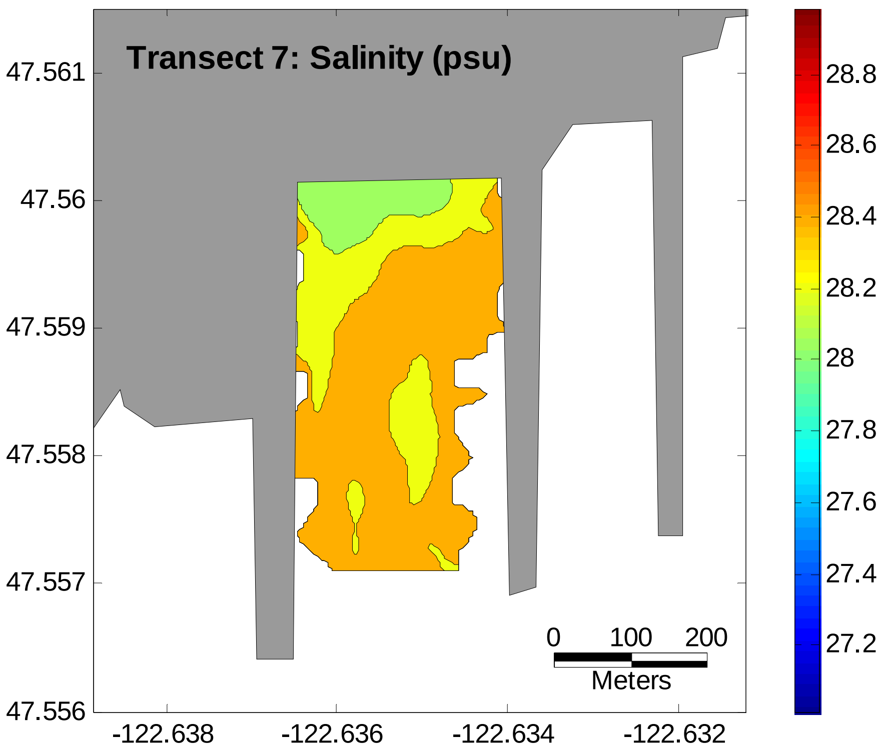


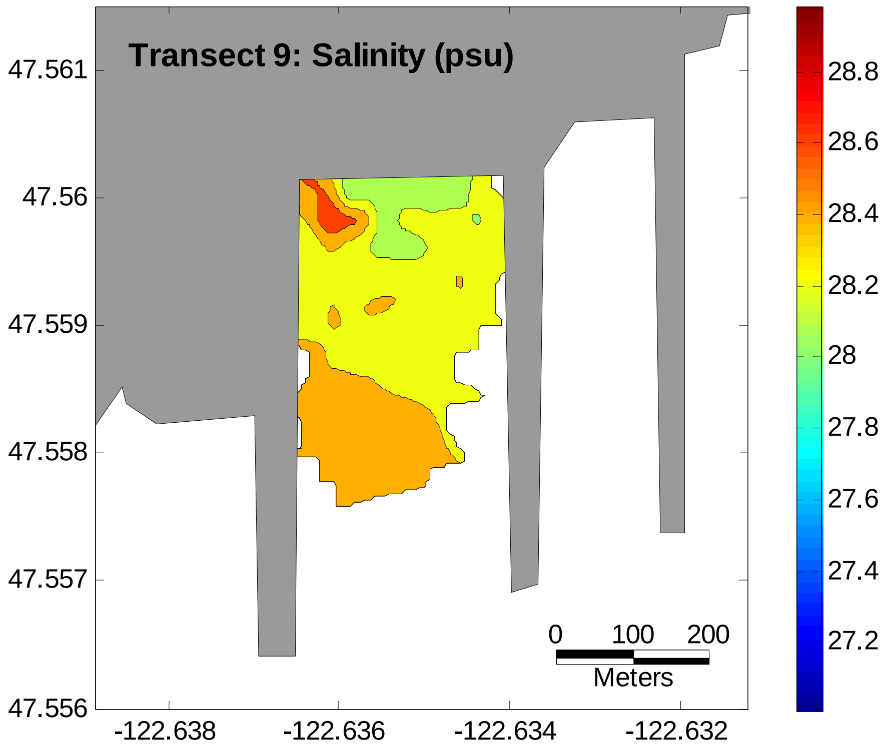
Transect 3: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

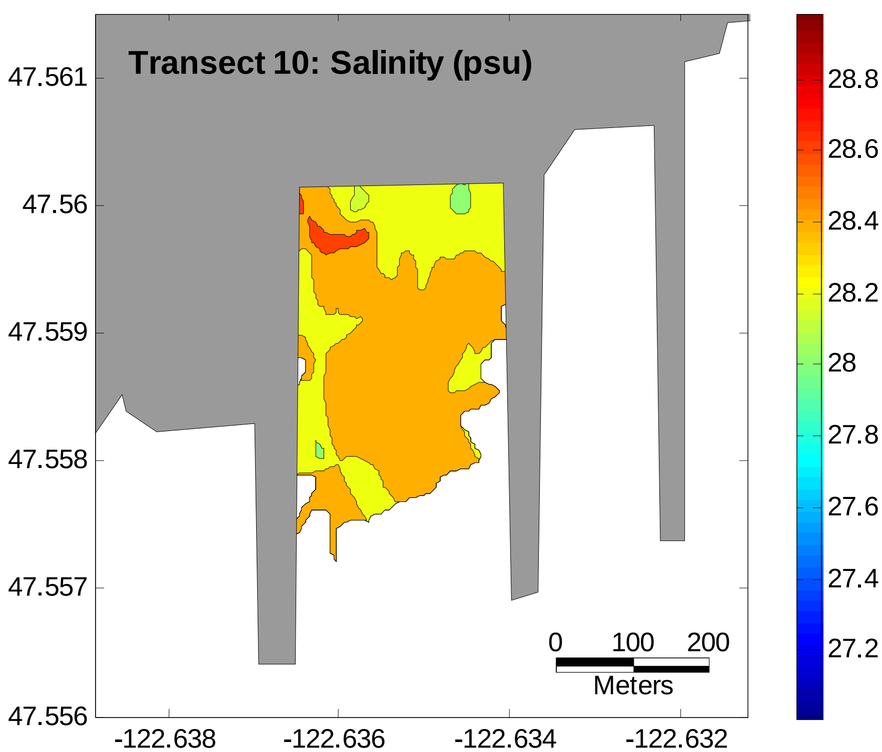

Transect 4: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

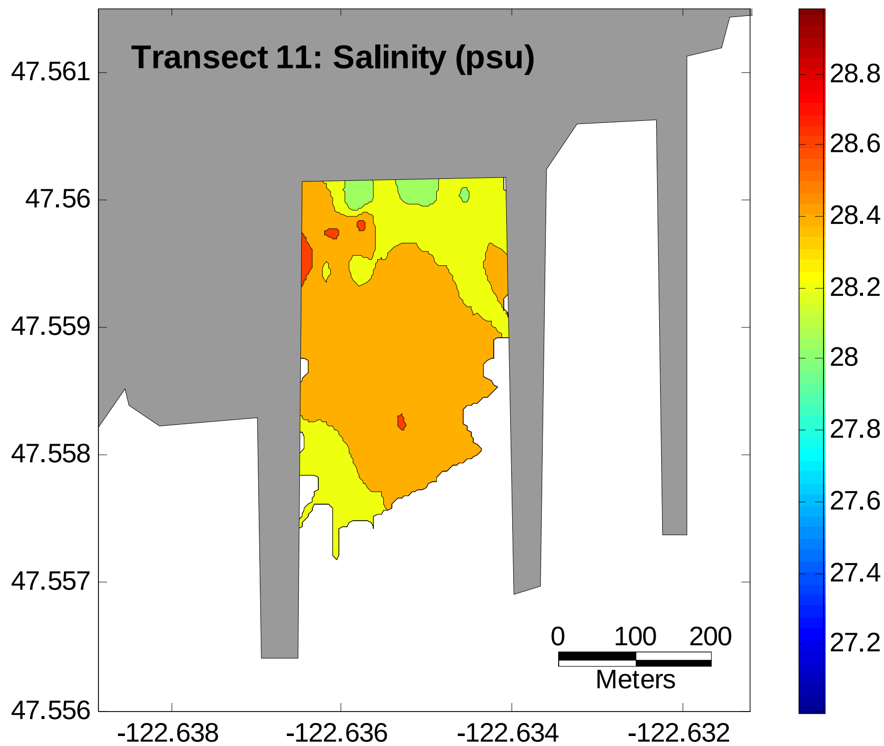

Transect 5: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

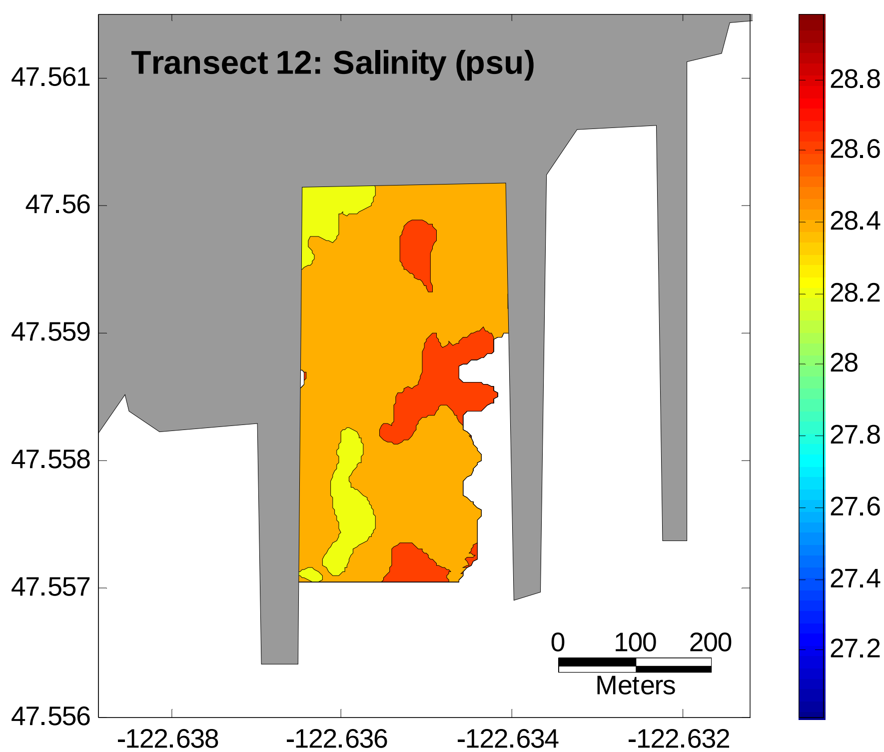

Transect 6: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

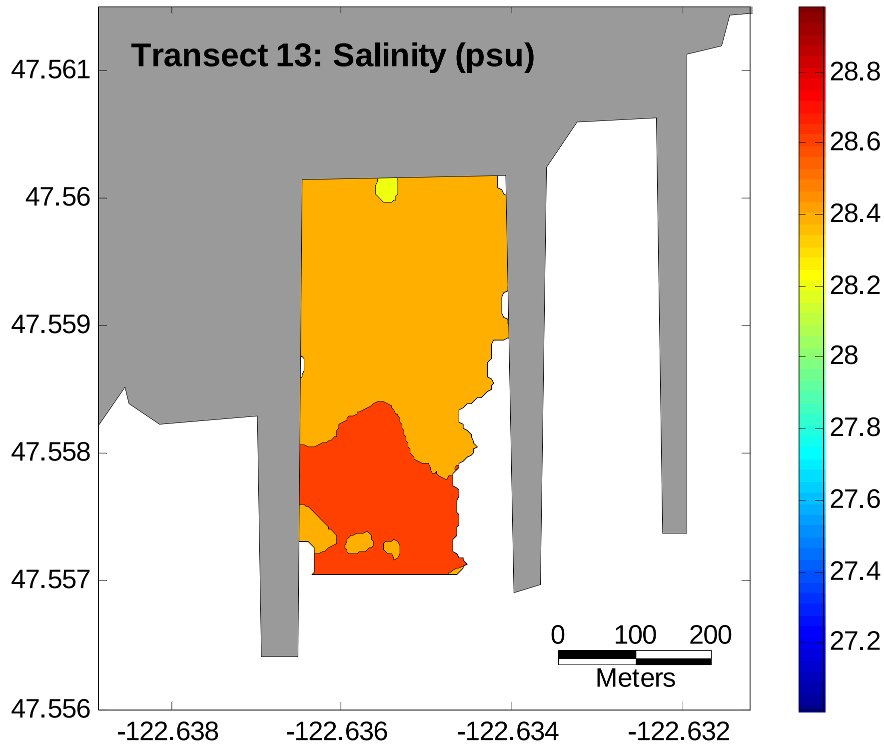

Transect 7: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

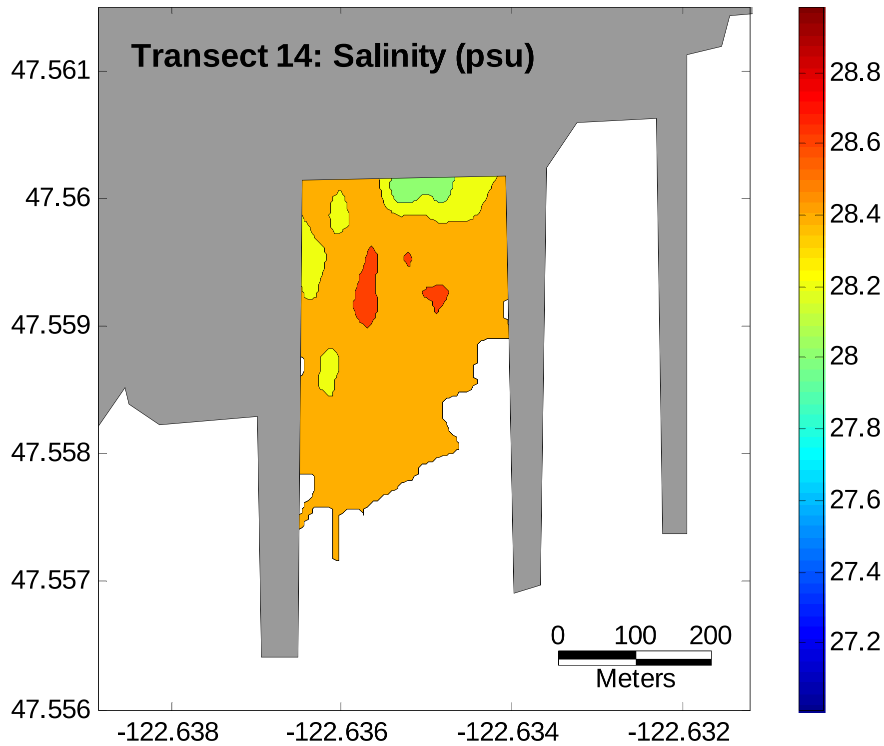

Transect 9: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

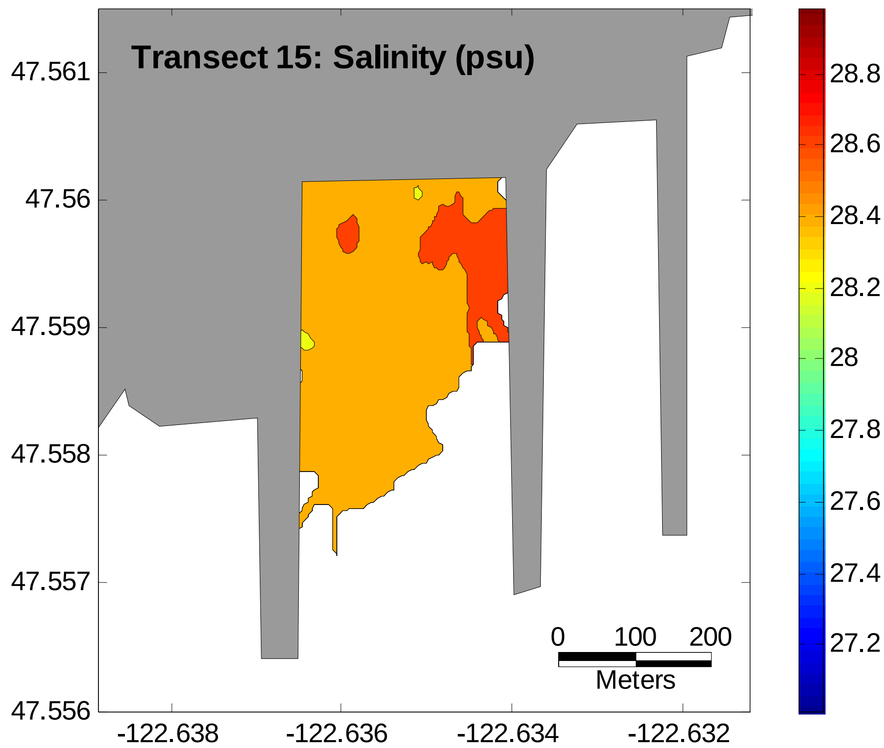

Transect 10: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

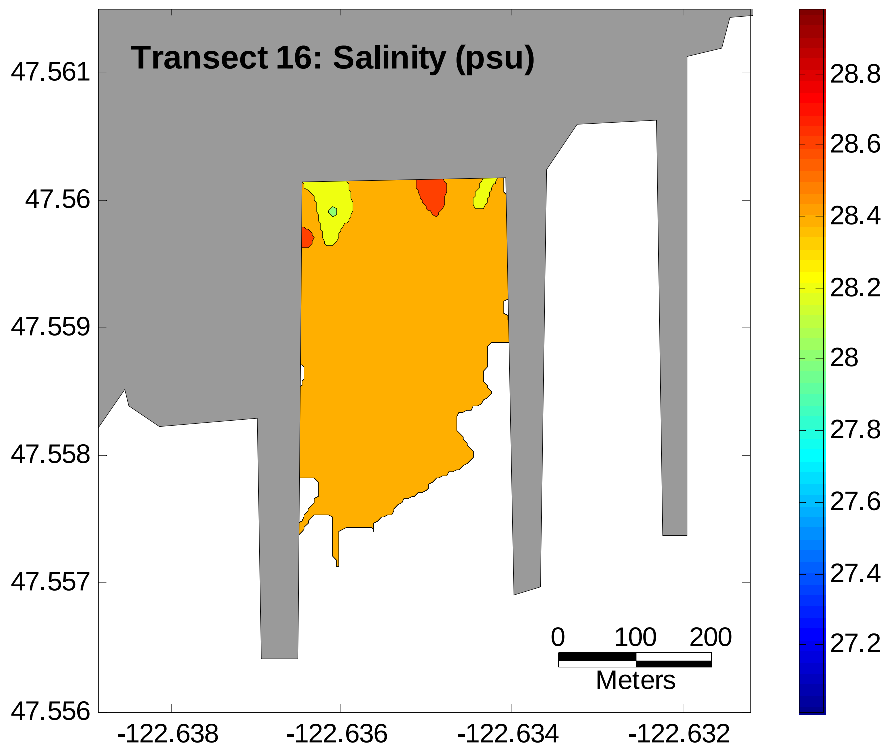

Transect 11: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

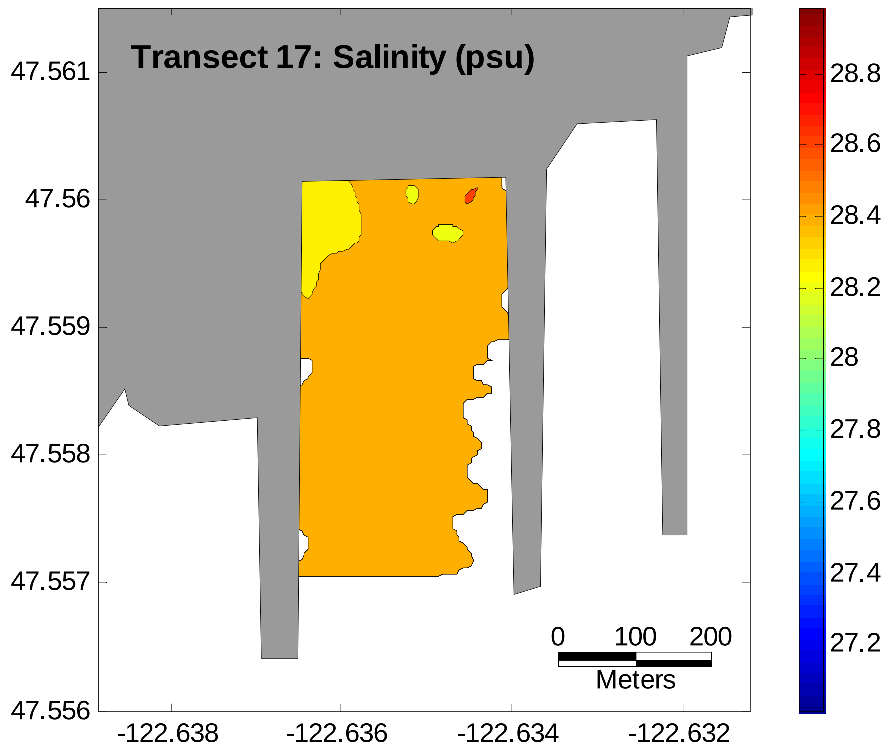

Transect 12: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

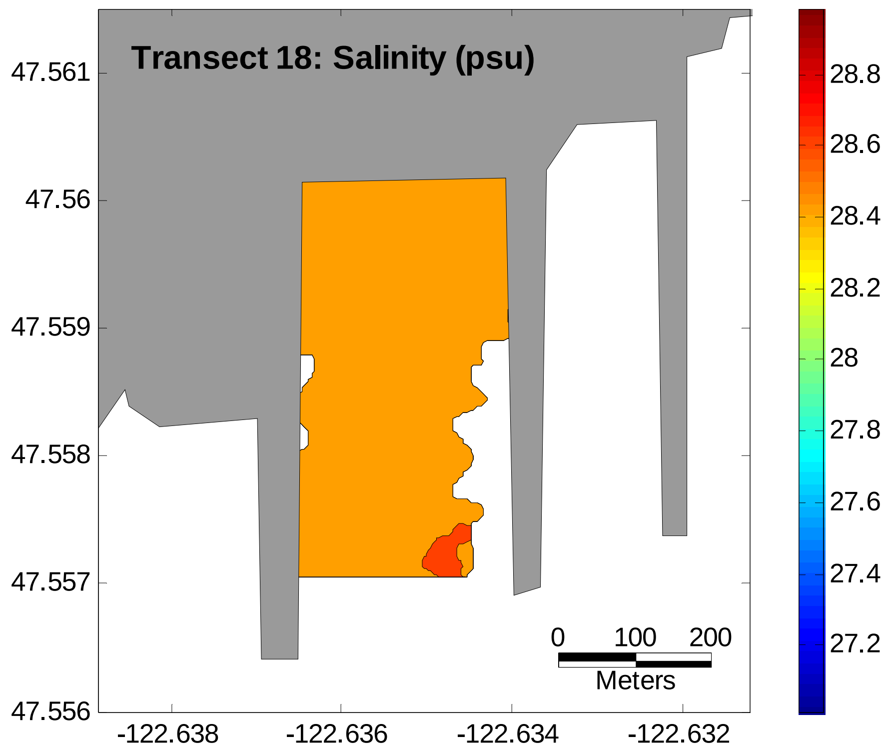

Transect 13: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2


Transect 14: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2


Transect 15: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2


Transect 16: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

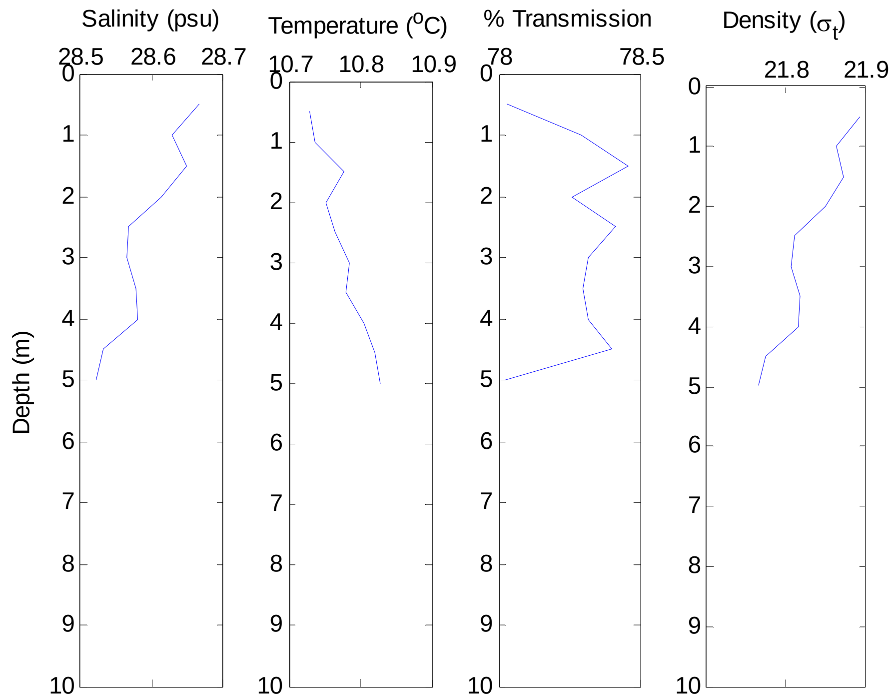

Transect 17: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2


Transect 18: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.8
28.6
28.4
28.2
28
27.8
27.6
27.4
27.2

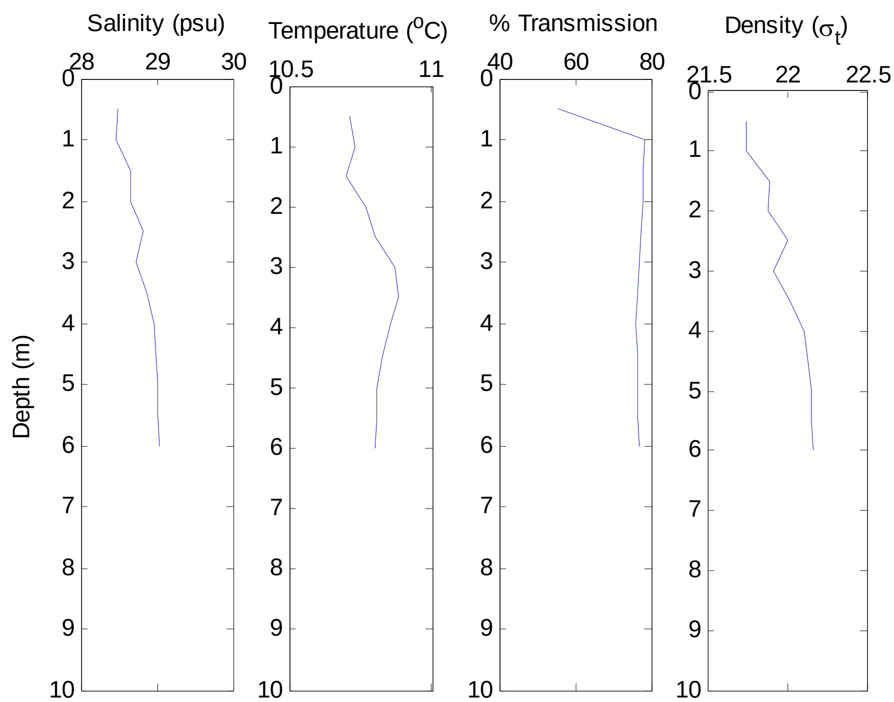
APPENDIX E- RUN 3 VERTICAL DATA

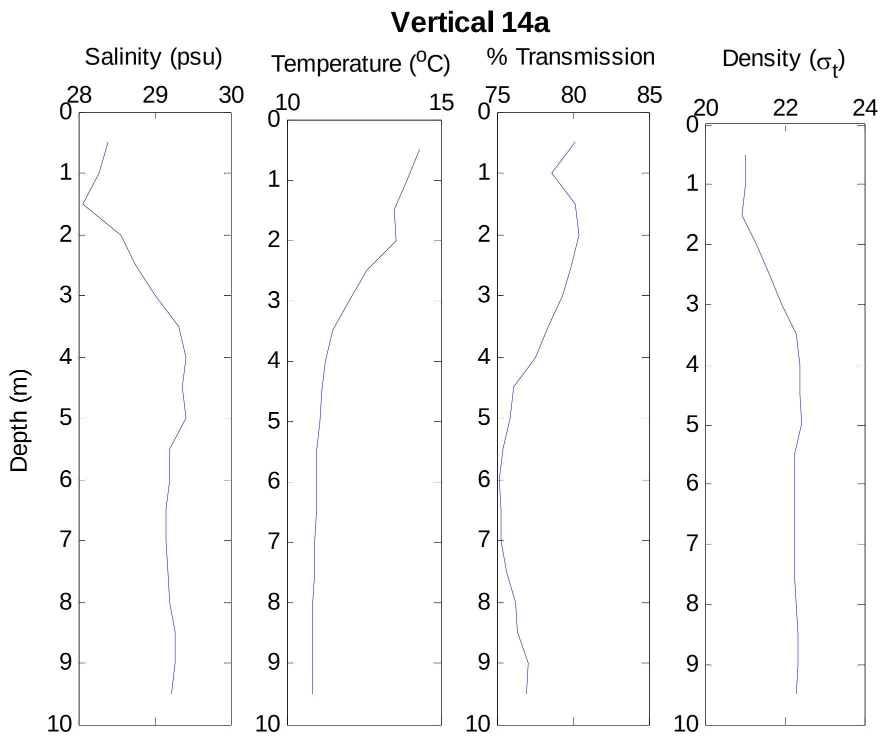
VERTICAL	Start	End	Tide (cm)
3	26.4201	26.4237	255.3
3b	26.4245	26.4275	253.0
14a	26.6445	26.6473	39.6
14	26.6590	26.6612	29.2
15	26.6730	26.6760	21.7
16	26.7042	26.7067	18.3
18	26.7427	26.7451	35.2

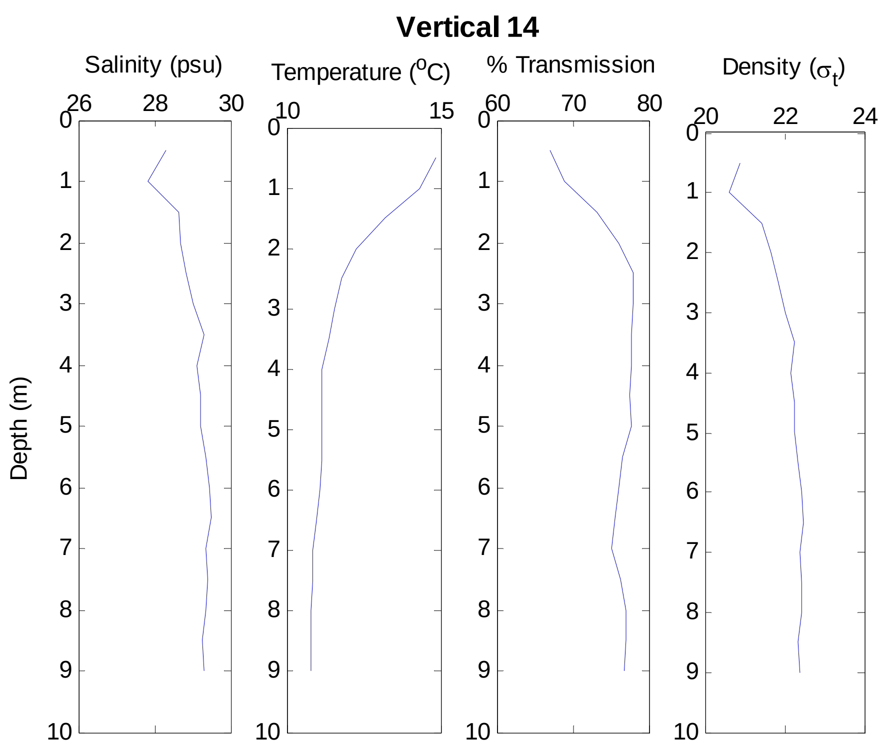
Vertical 3

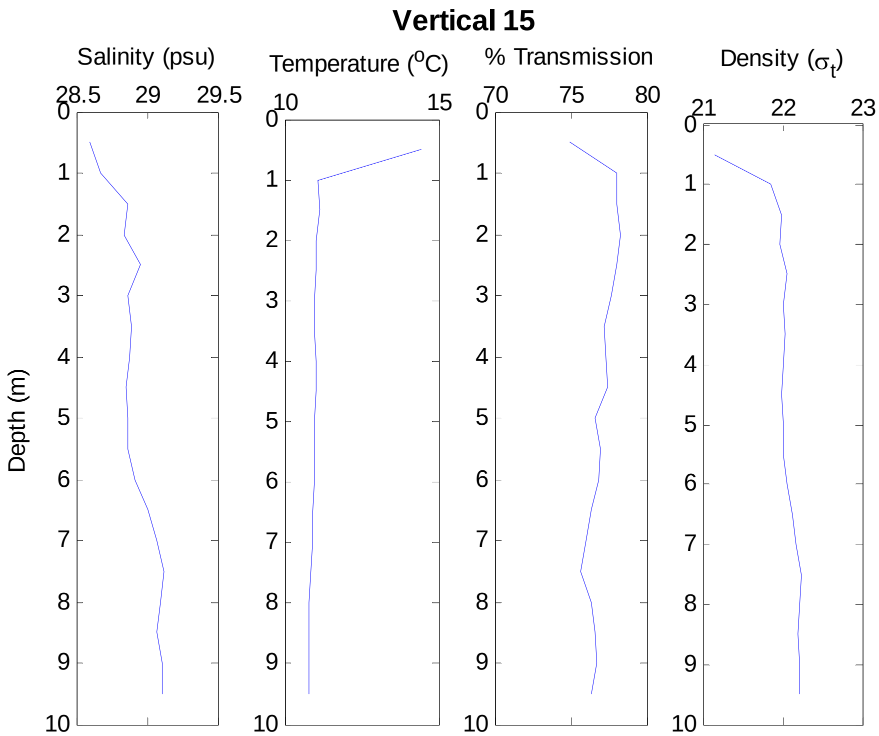


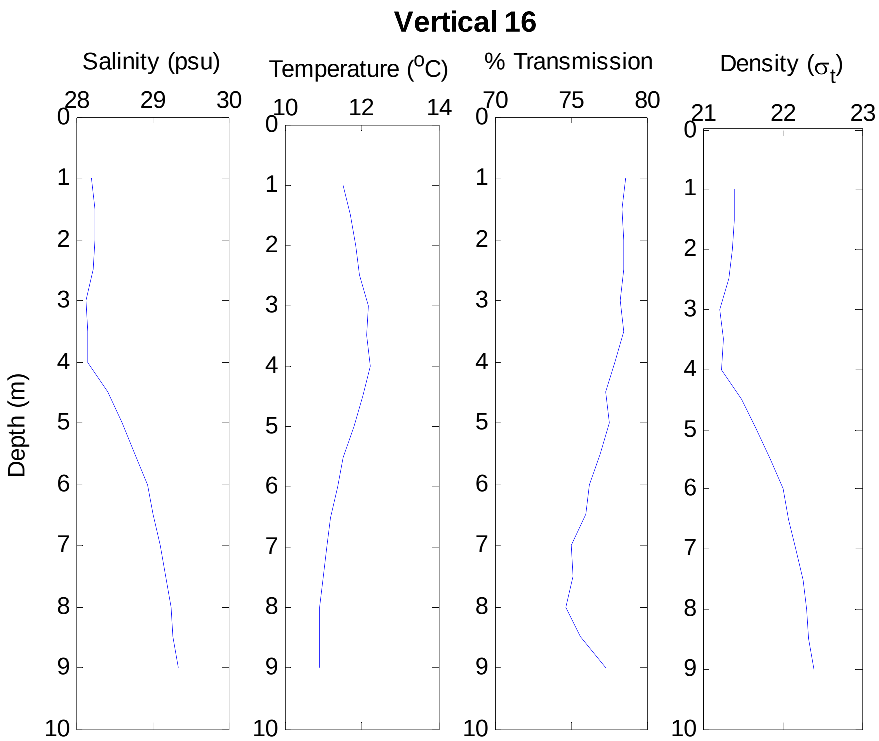
Vertical 3b

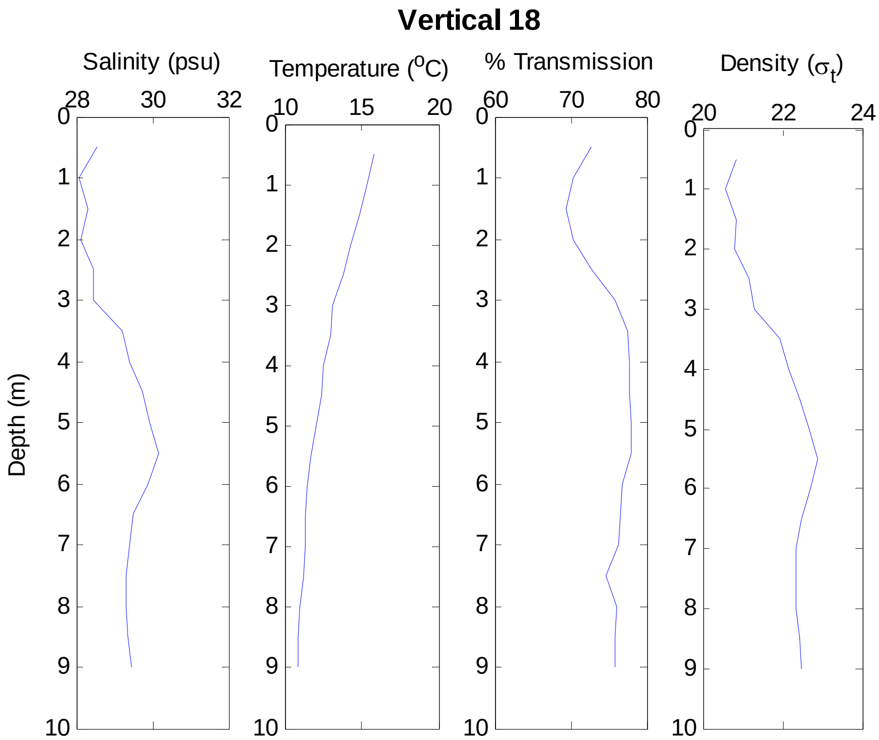


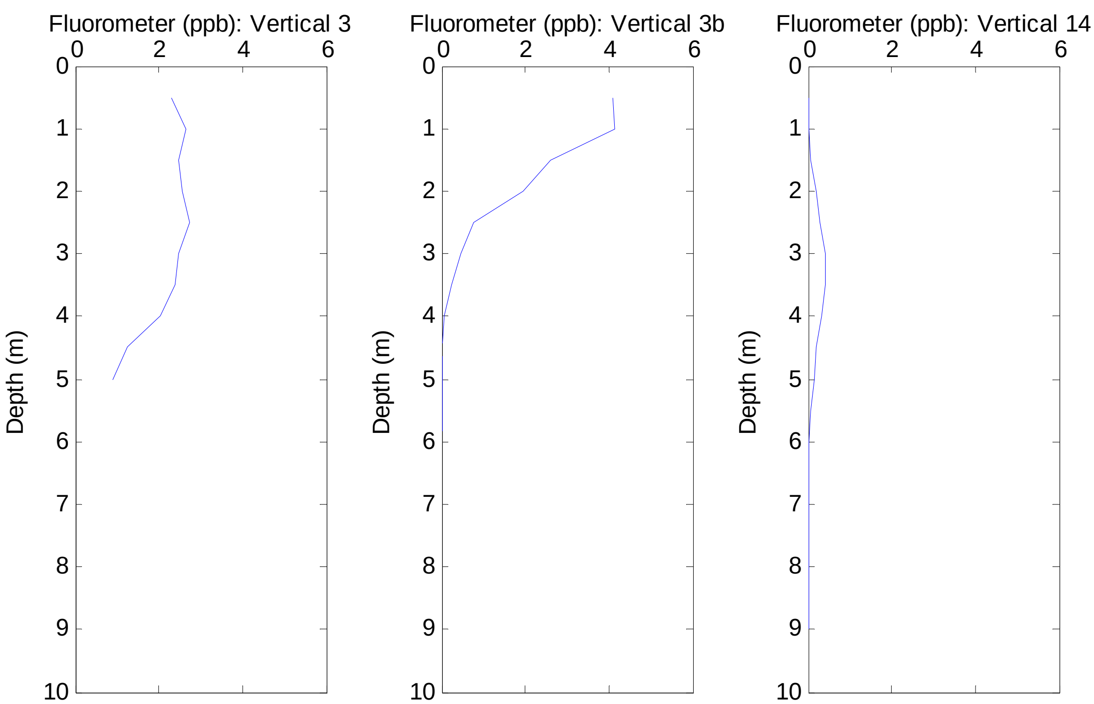

Vertical 14a
Salinity (psu)
Temperature (°C)
% Transmission
Density (σt)
Depth (m)
28 29 30
10 15
75 80 85
20 22 24
0 1 2 3 4 5 6 7 8 9 10

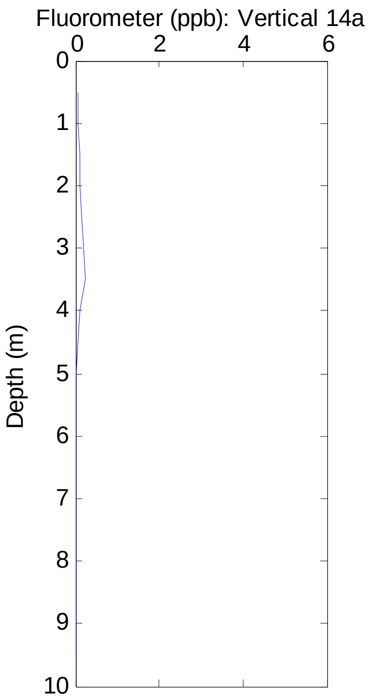

Vertical 14
Salinity (psu)
Temperature (°C)
% Transmission
Density (σt)
Depth (m)
26 28 30
10 15
60 70 80
20 22 24
0 1 2 3 4 5 6 7 8 9 10

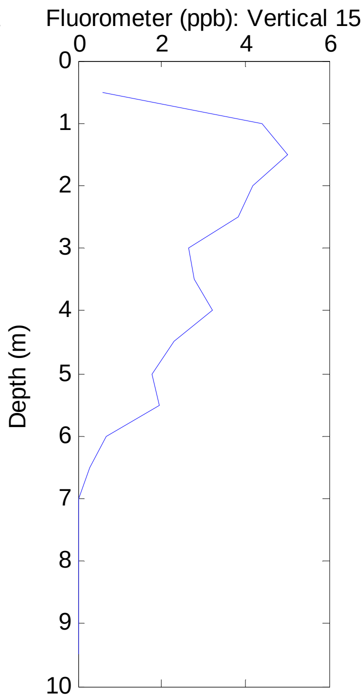

Vertical 15
Salinity (psu)
Temperature (^{o}C)
% Transmission
Density (σ_t)
Depth (m)
28.5
29
29.5
10
15
70
75
80
21
22
23

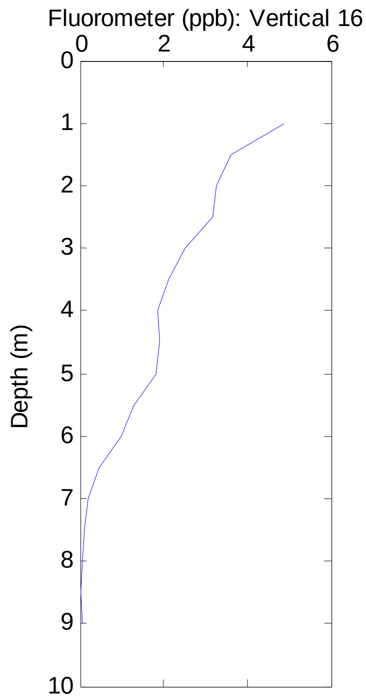

Vertical 16
Salinity (psu)
Temperature (^{o}C)
% Transmission
Density (σ_t)
Depth (m)
28
29
30
10
12
14
70
75
80
21
22
23

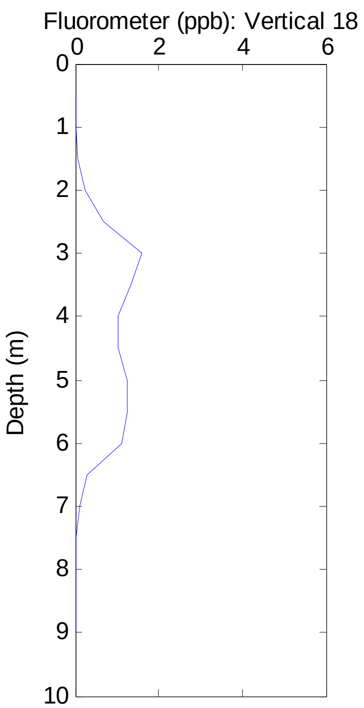

Vertical 18
Salinity (psu)
Temperature (°C)
% Transmission
Density (σt)
Depth (m)


Fluorometer (ppb): Vertical 3
Fluorometer (ppb): Vertical 3b
Fluorometer (ppb): Vertical 14
Depth (m)


Fluorometer (ppb): Vertical 14a
Depth (m)

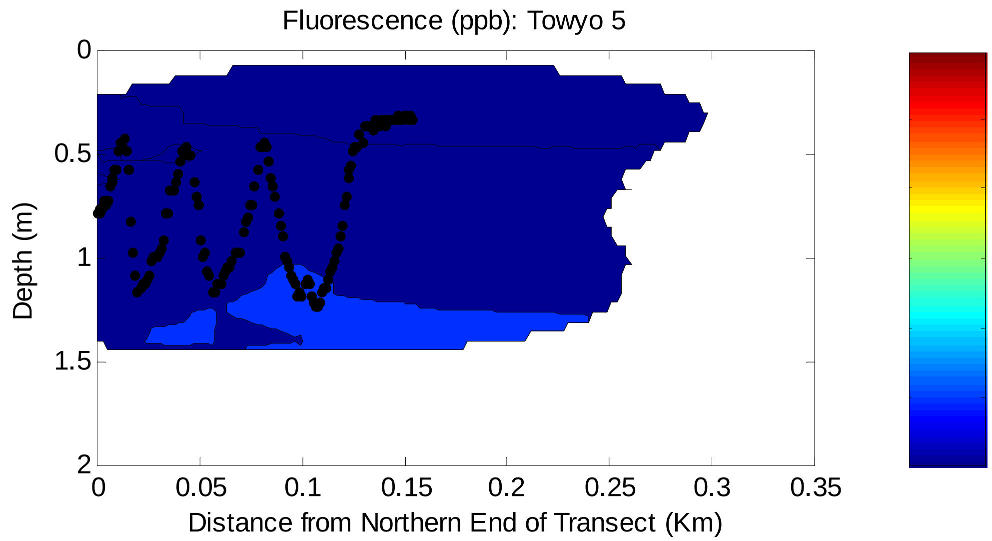

Fluorometer (ppb): Vertical 15
Depth (m)

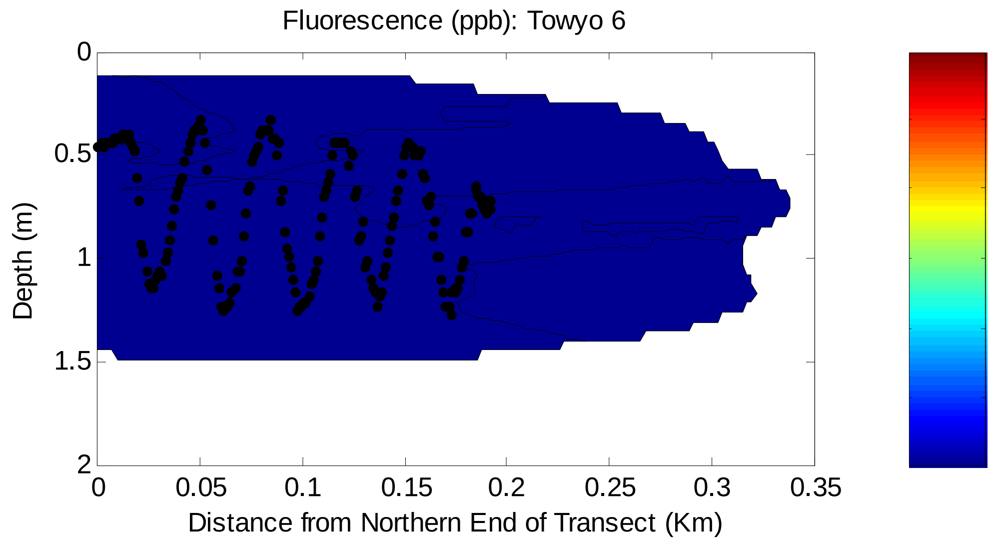

Fluorometer (ppb): Vertical 16
Depth (m)

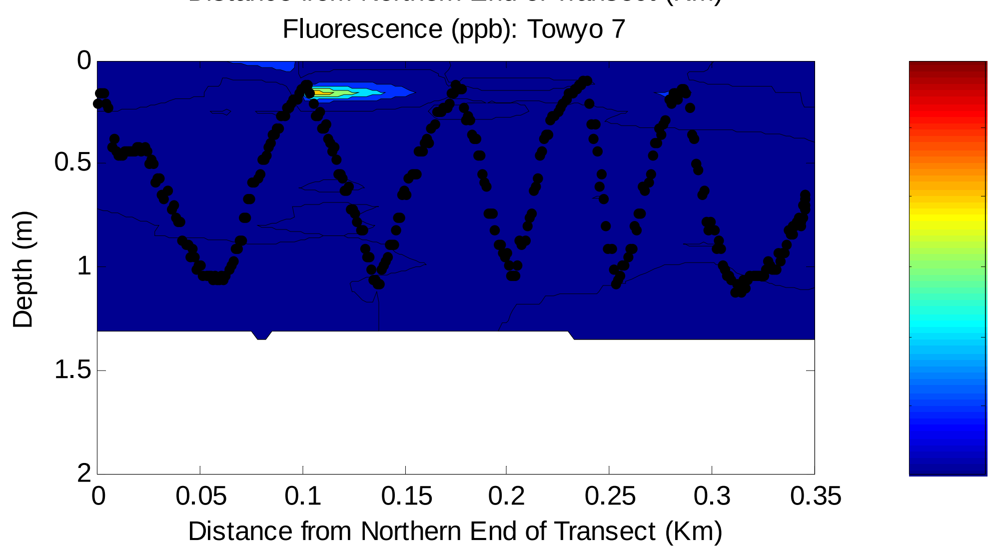

Fluorometer (ppb): Vertical 18
Depth (m)

APPENDIX F- RUN 3 TOW YO DATA

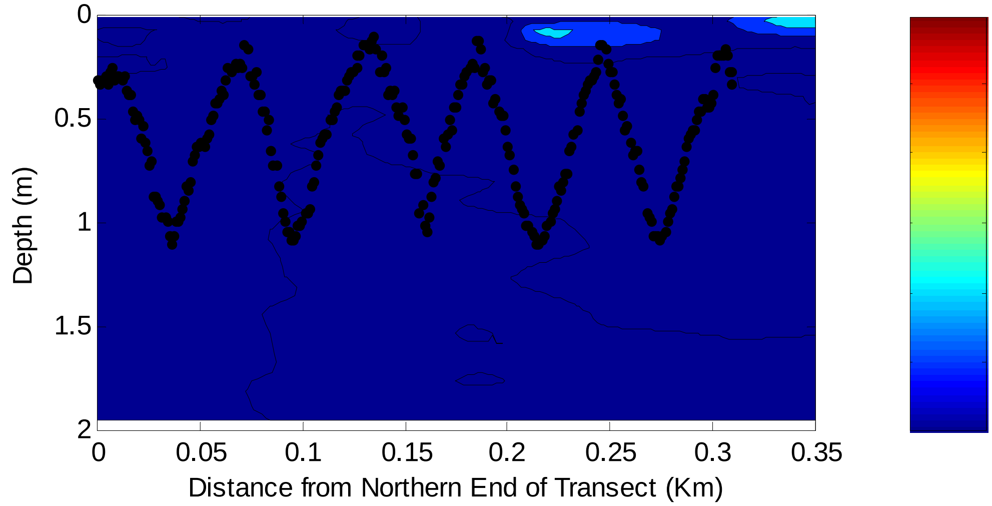
TOWYO	Start	End	Tide (cm)
5	26.4541	26.4558	237.2
6	26.4749	26.4771	218.7
7	26.4945	26.4984	200.3
9	26.5395	26.5419	150.8
8a	26.4989	26.5023	194.6
8b	26.5026	26.5047	192.4
8c	26.5065	26.5080	187.5
10	26.5538	26.5559	133.6
12	26.5970	26.6006	83.2
13	26.6238	26.6270	54.6
14	26.6613	26.6634	27.5
15	26.6869	26.6890	18.3
16	26.7015	26.7043	18.3
17	26.7207	26.7234	24.4
18	26.7391	26.7427	33.0


Fluorescence (ppb): Towyo 5
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
1
2
3
4
5

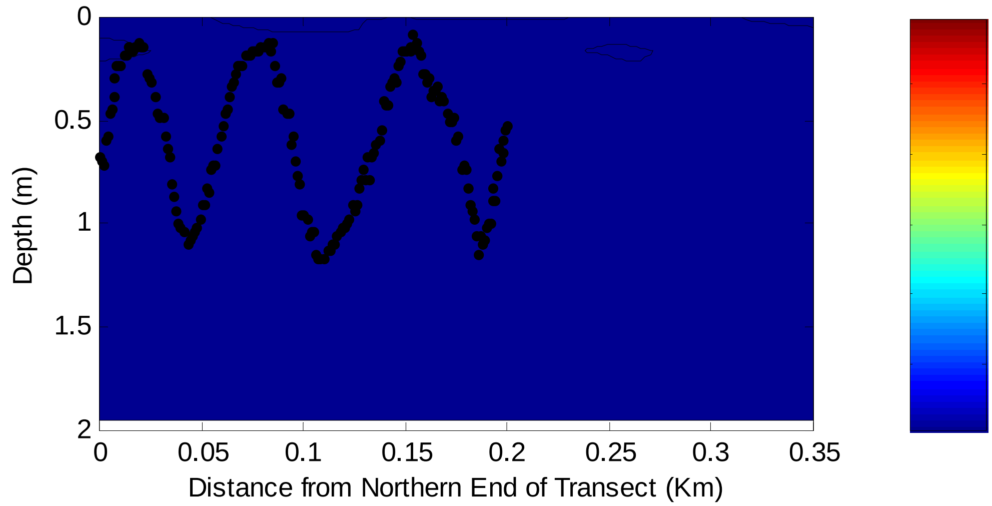

Fluorescence (ppb): Towyo 6
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
1
2
3
4
5


Fluorescence (ppb): Towyo 7
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
1
2
3
4
5

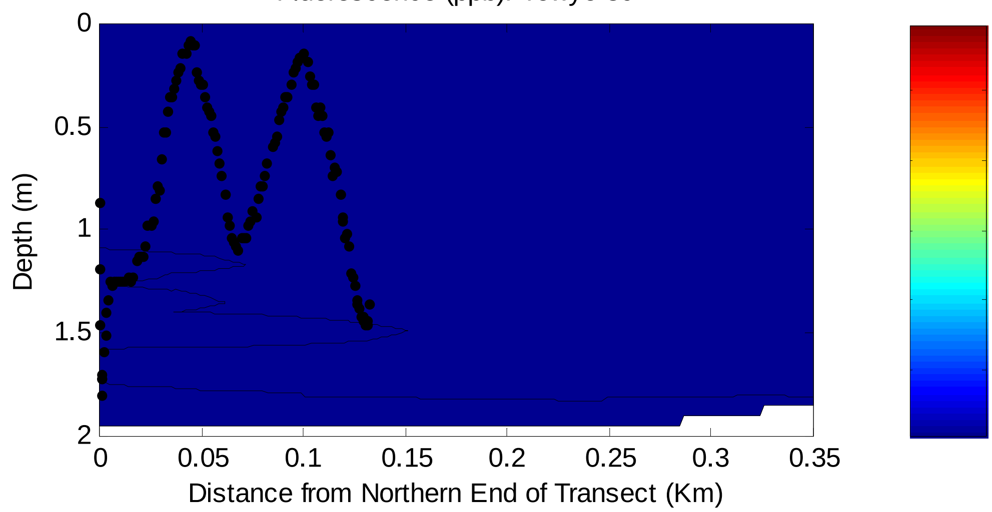
Fluorescence (ppb): Towyo 8a



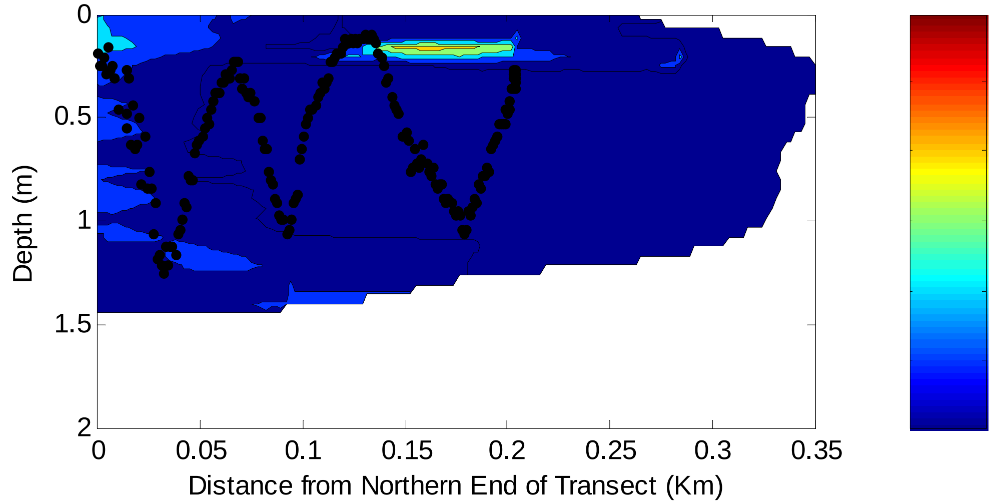
Fluorescence (ppb): Towyo 8b



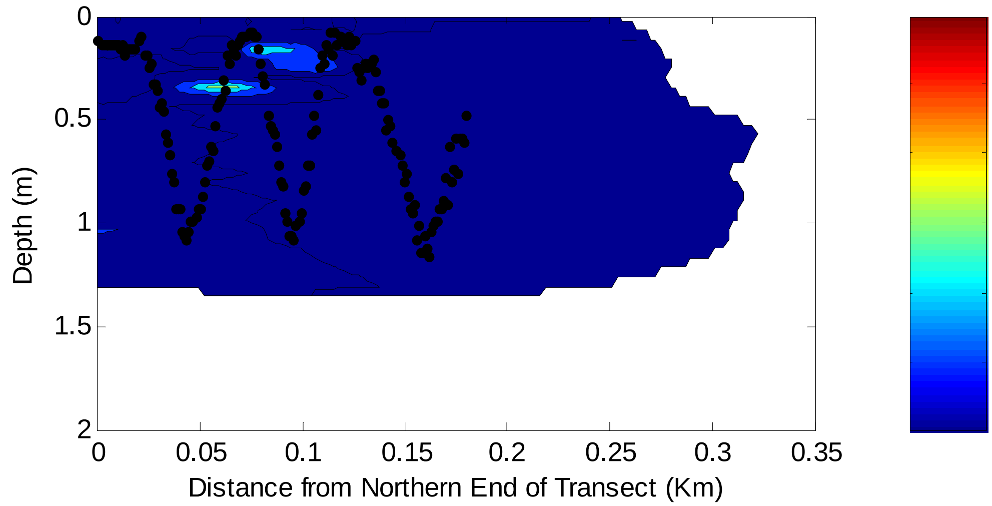
Fluorescence (ppb): Towyo 8c



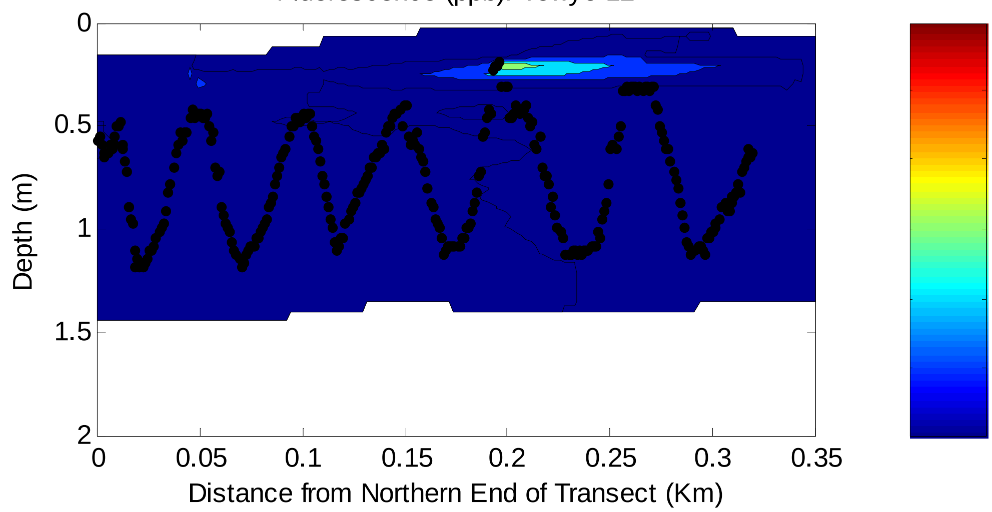
Fluorescence (ppb): Towyo 9

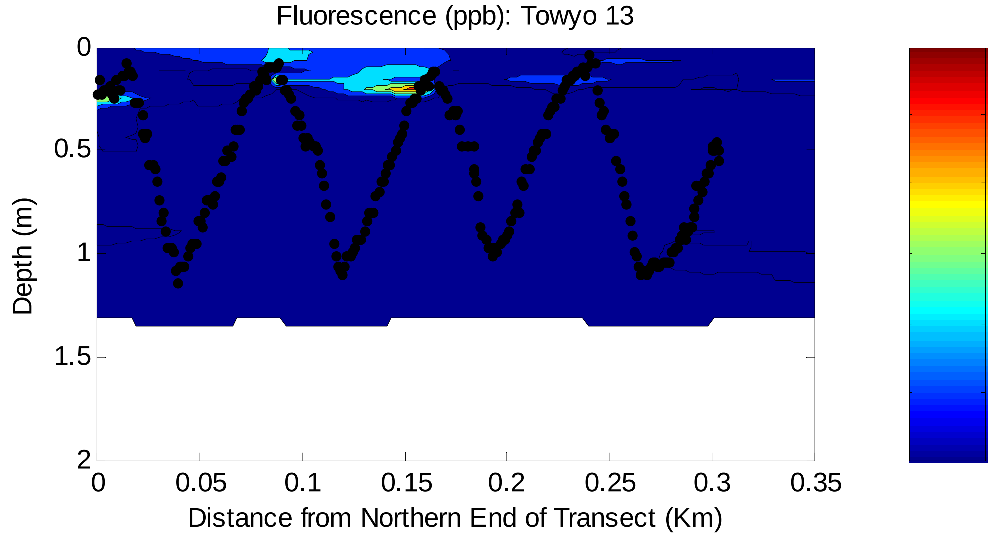


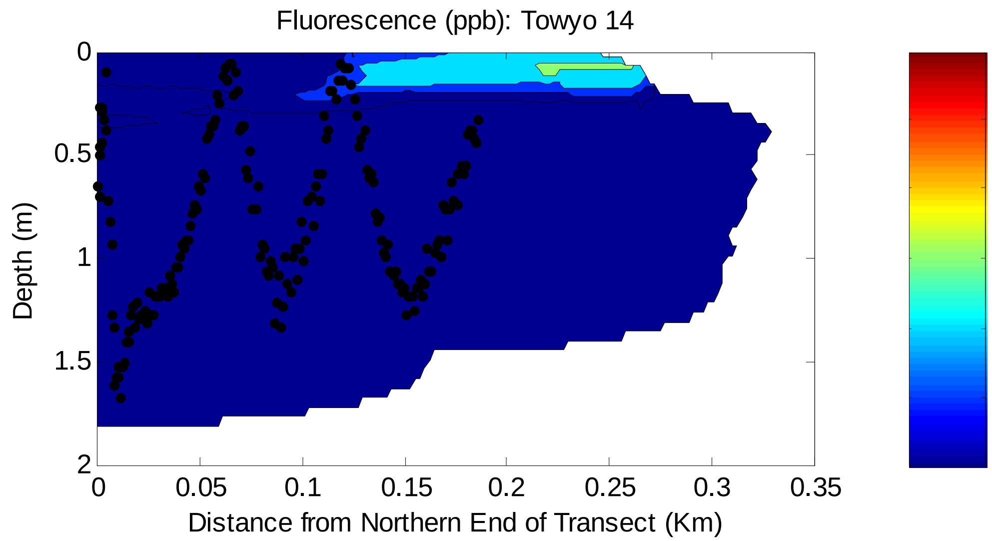
Fluorescence (ppb): Towyo 10

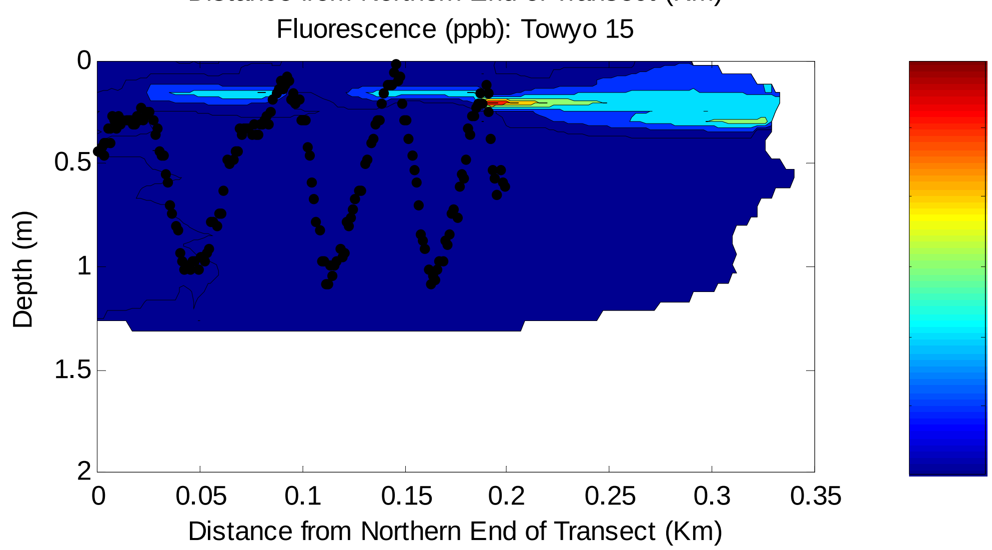


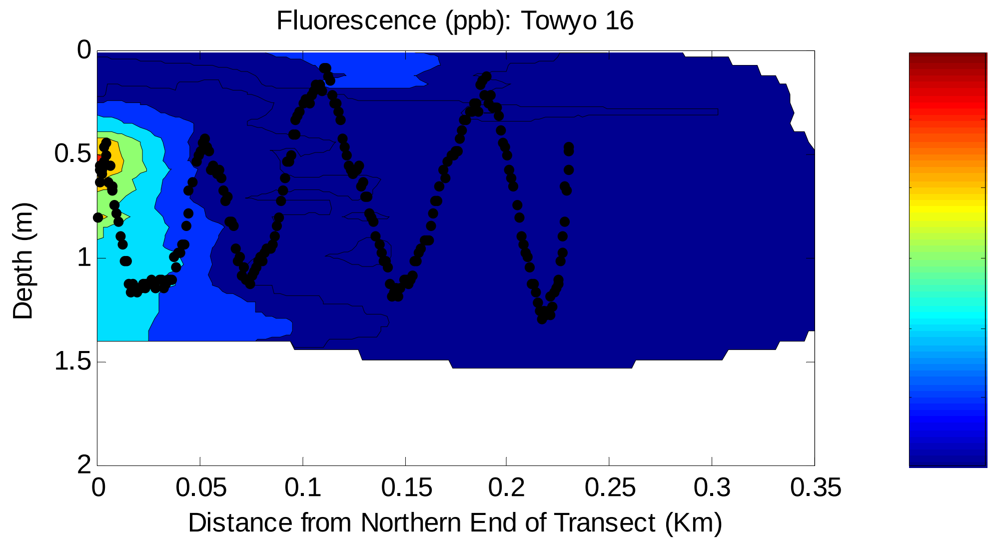
Fluorescence (ppb): Towyo 12

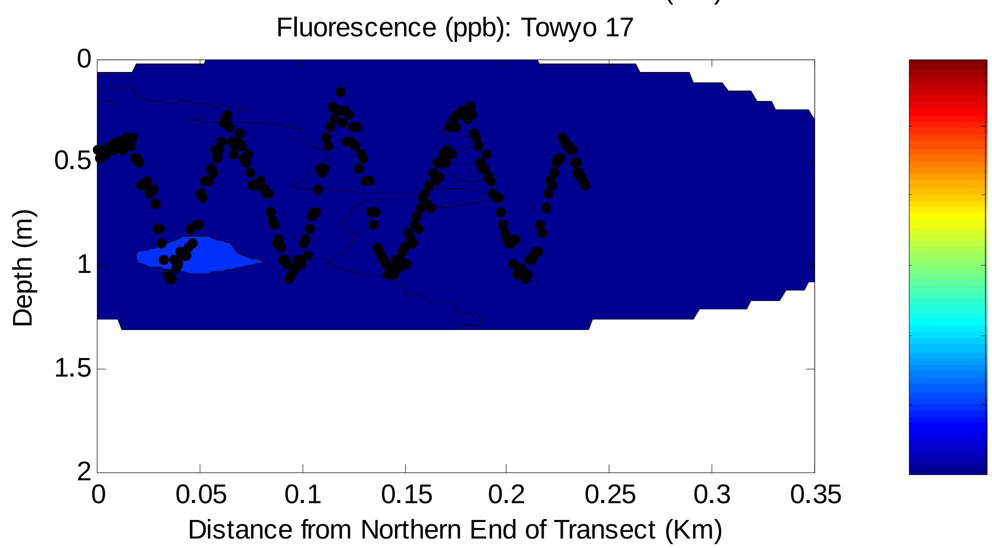


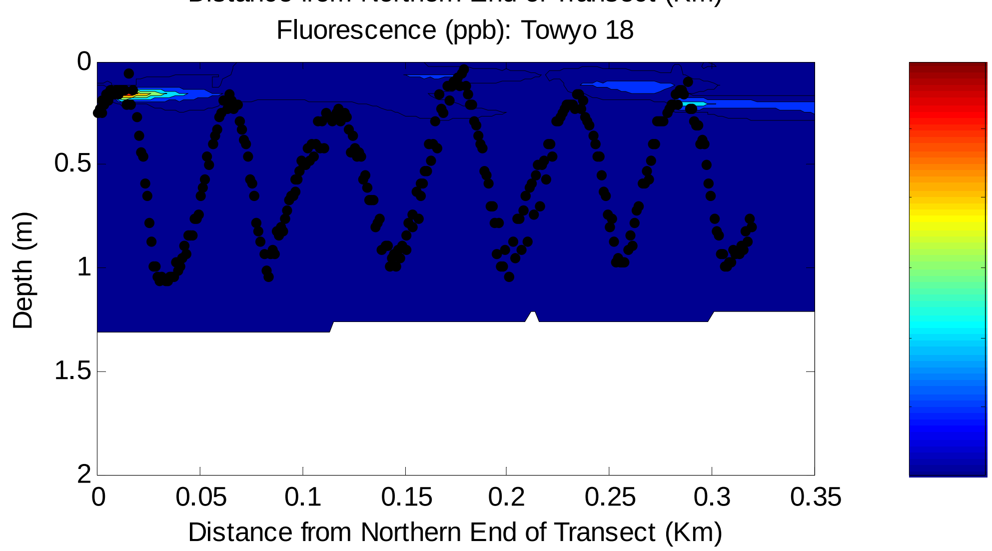

Fluorescence (ppb): Towyo 13
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1

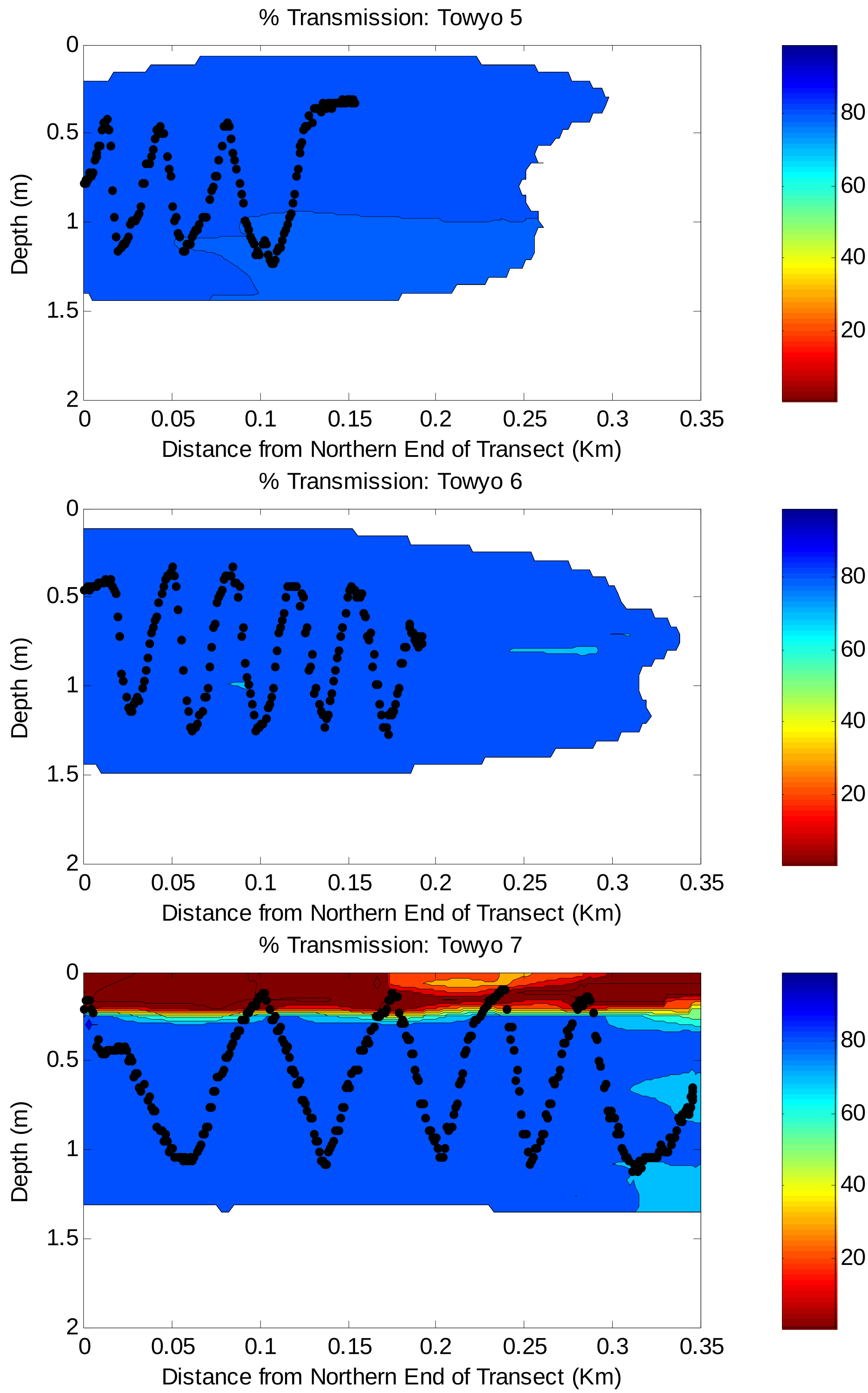

Fluorescence (ppb): Towyo 14
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1

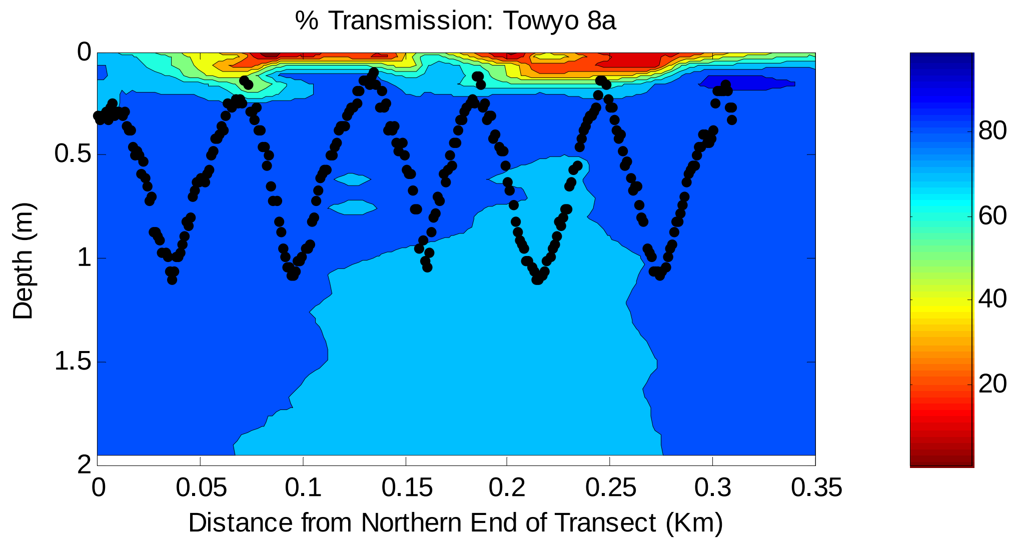

Fluorescence (ppb): Towyo 15
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1

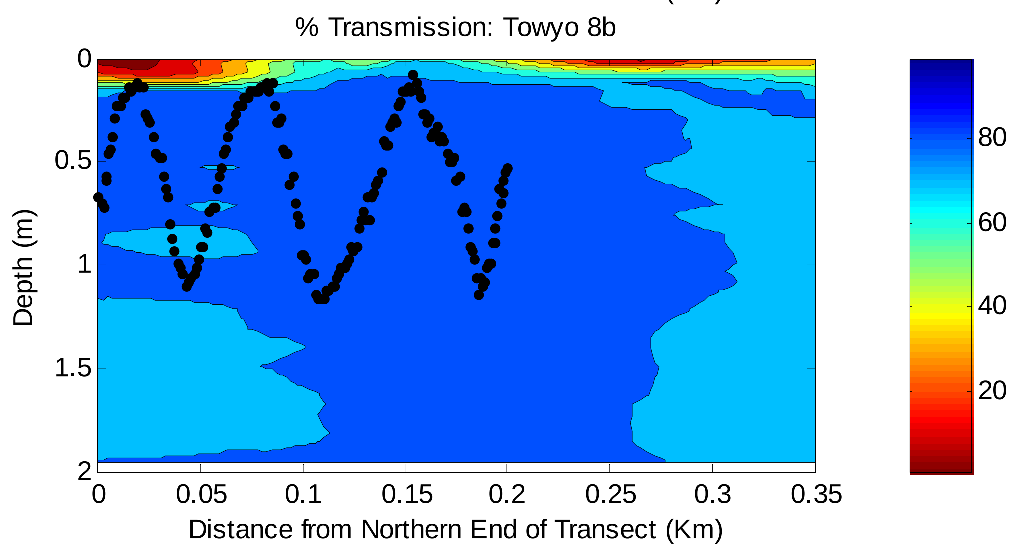

Fluorescence (ppb): Towyo 16
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1

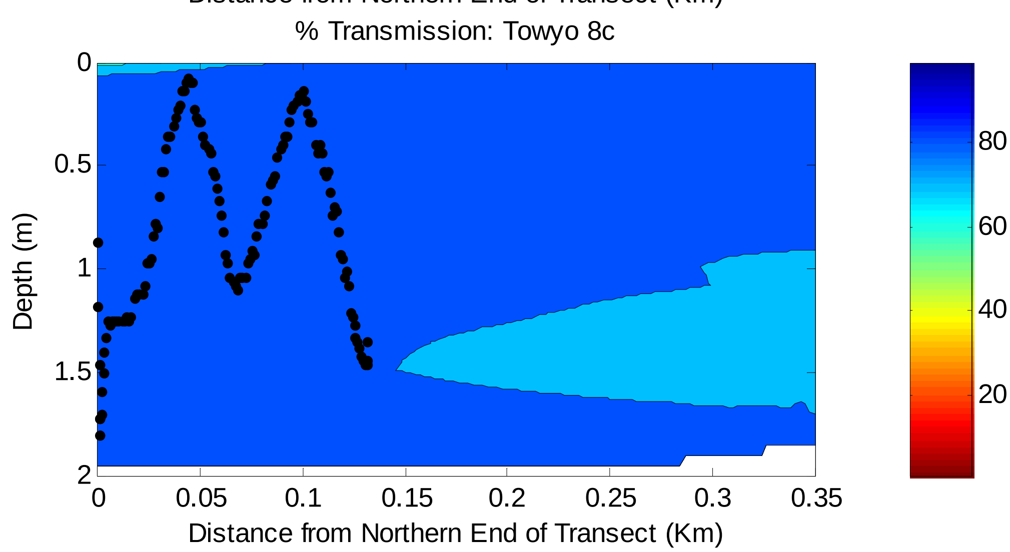

Fluorescence (ppb): Towyo 17
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1

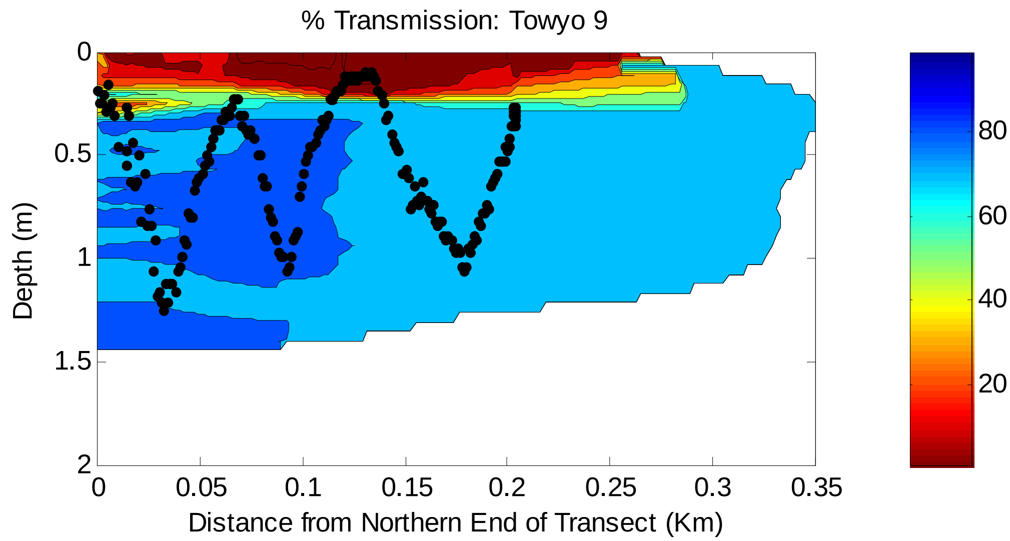

Fluorescence (ppb): Towyo 18
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
5
4
3
2
1


% Transmission: Towyo 5
Depth (m)
Distance from Northern End of Transect (Km)
% Transmission: Towyo 6
Depth (m)
Distance from Northern End of Transect (Km)
% Transmission: Towyo 7
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

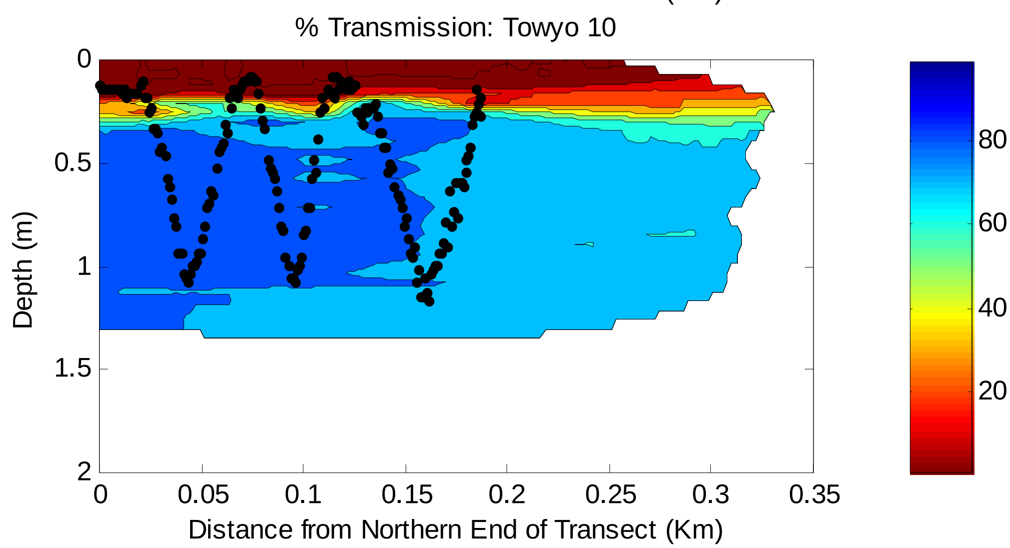

% Transmission: Towyo 8a
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
80
60
40
20


% Transmission: Towyo 8b
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
80
60
40
20

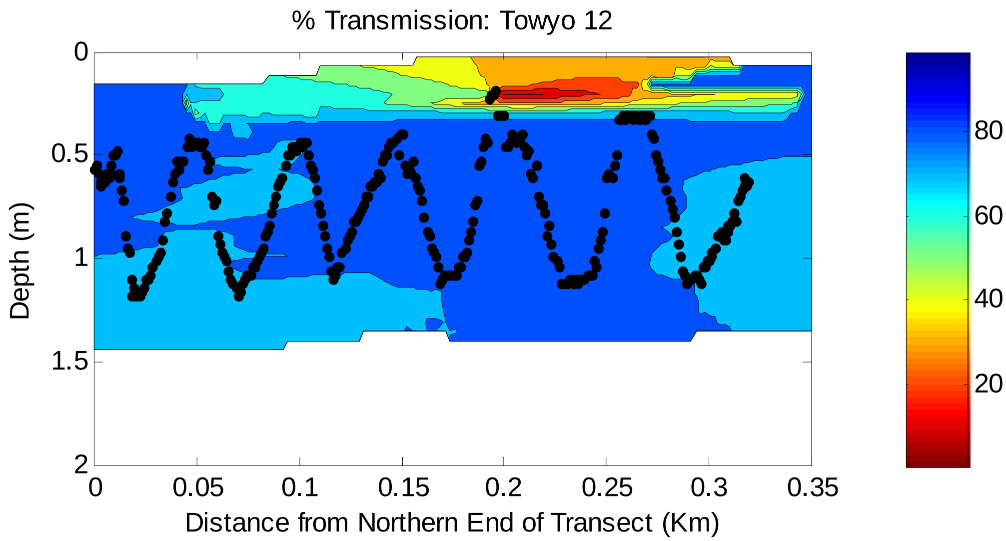

% Transmission: Towyo 8c
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
80
60
40
20

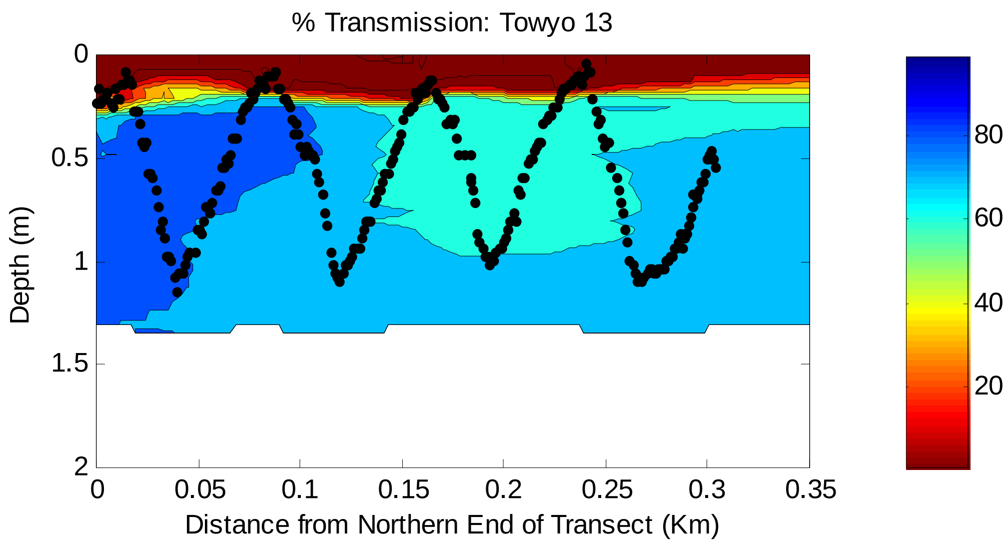


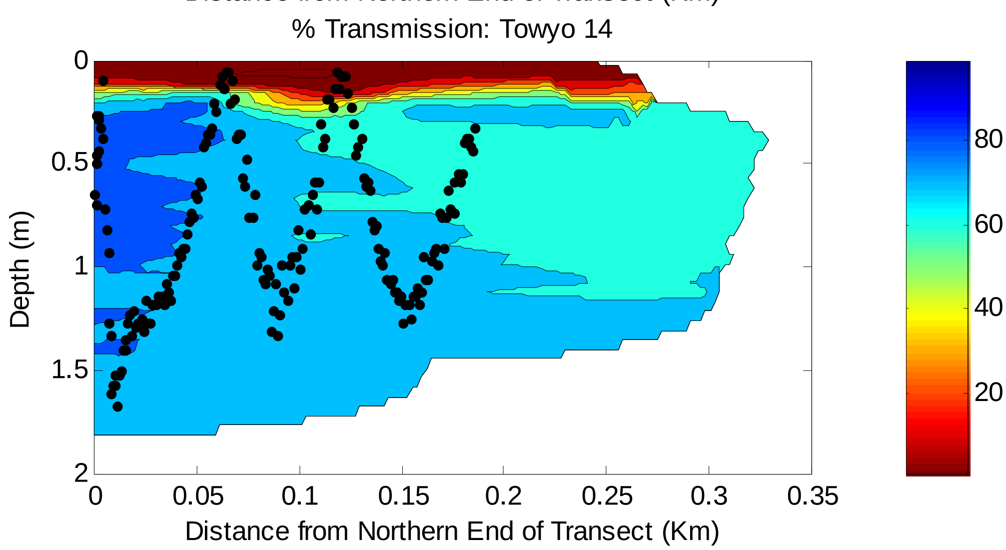
% Transmission: Towyo 9
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

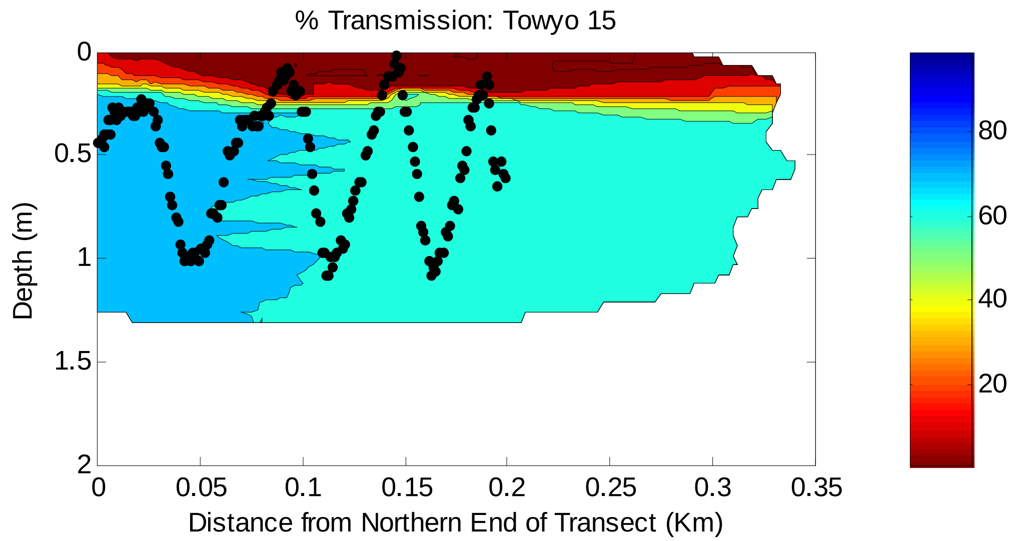


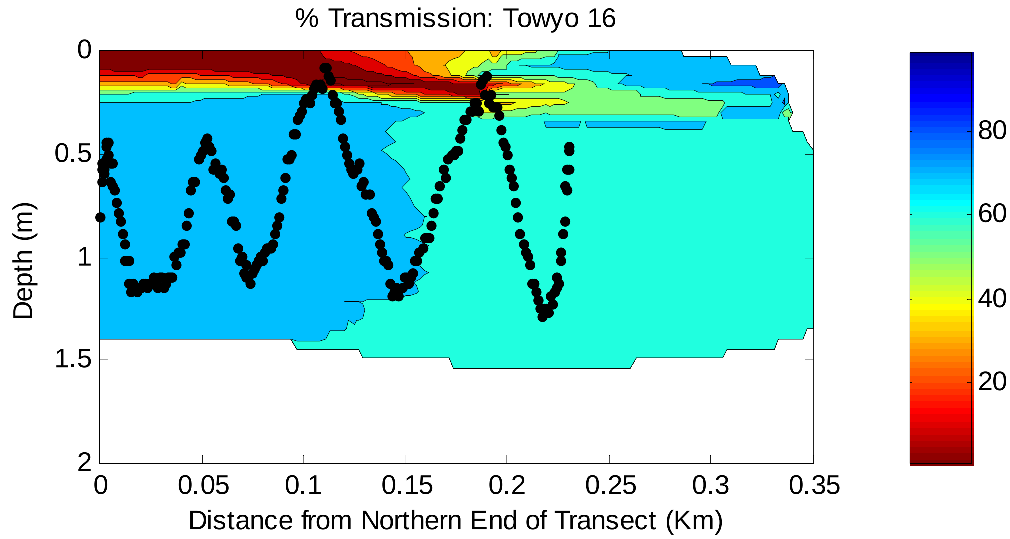
% Transmission: Towyo 10
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

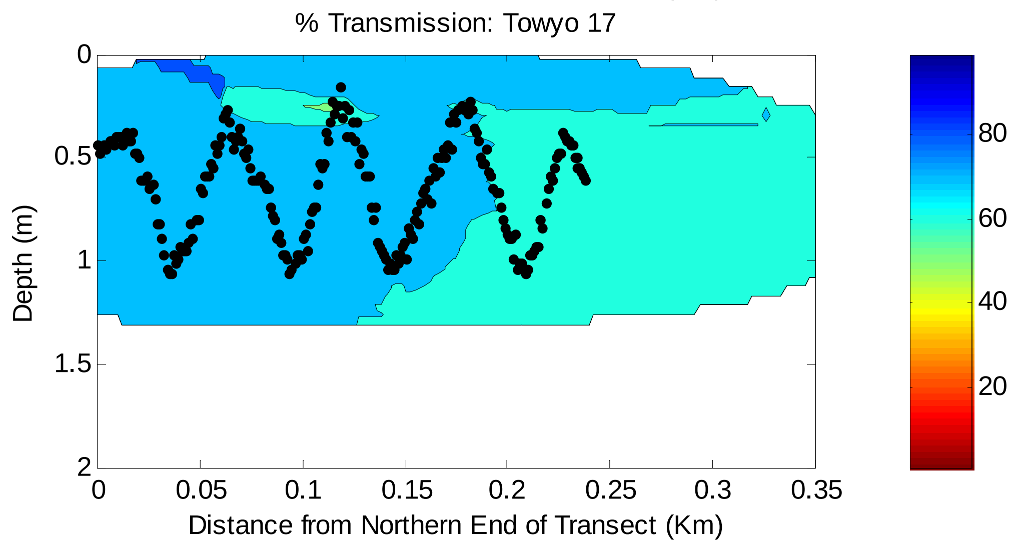

% Transmission: Towyo 12
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

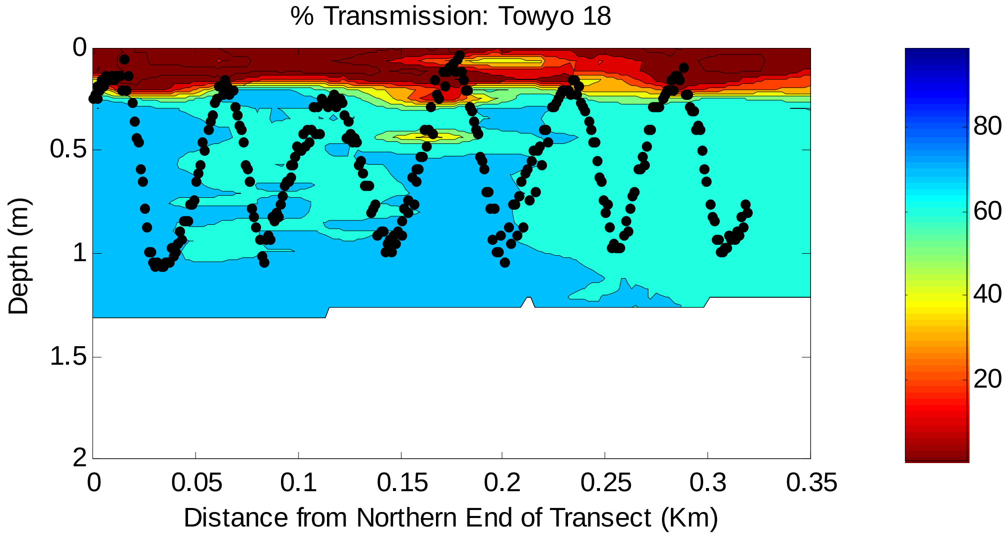

% Transmission: Towyo 13
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

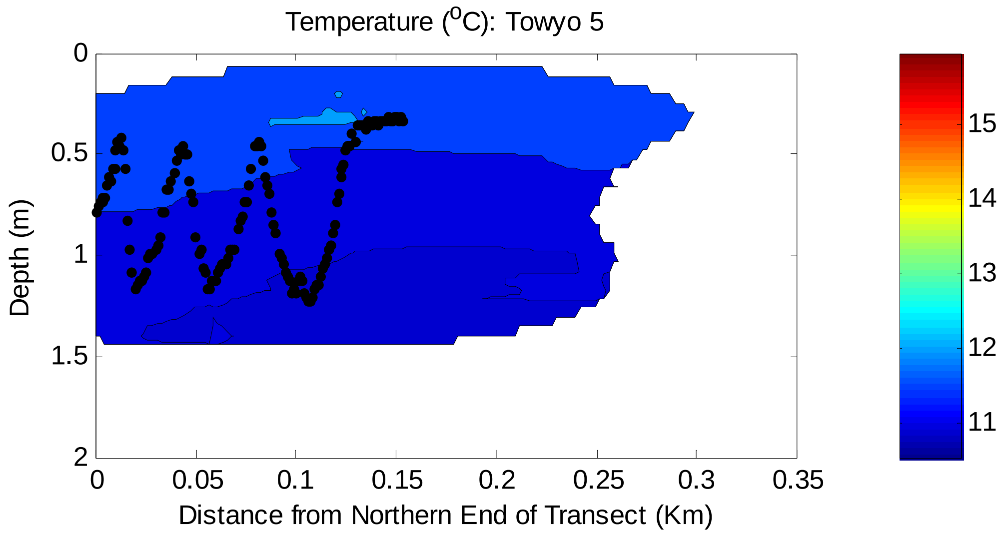

% Transmission: Towyo 14
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

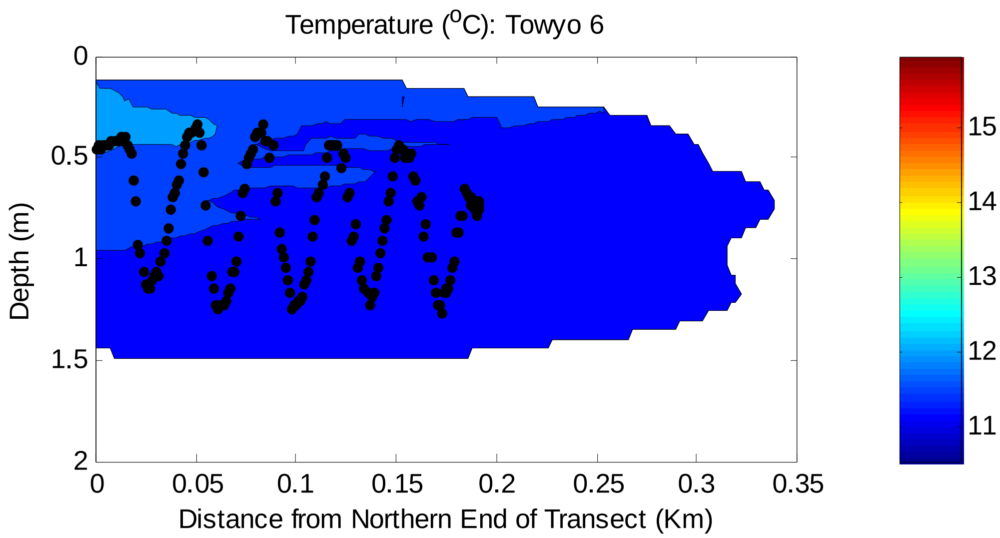

% Transmission: Towyo 15
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20


% Transmission: Towyo 16
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

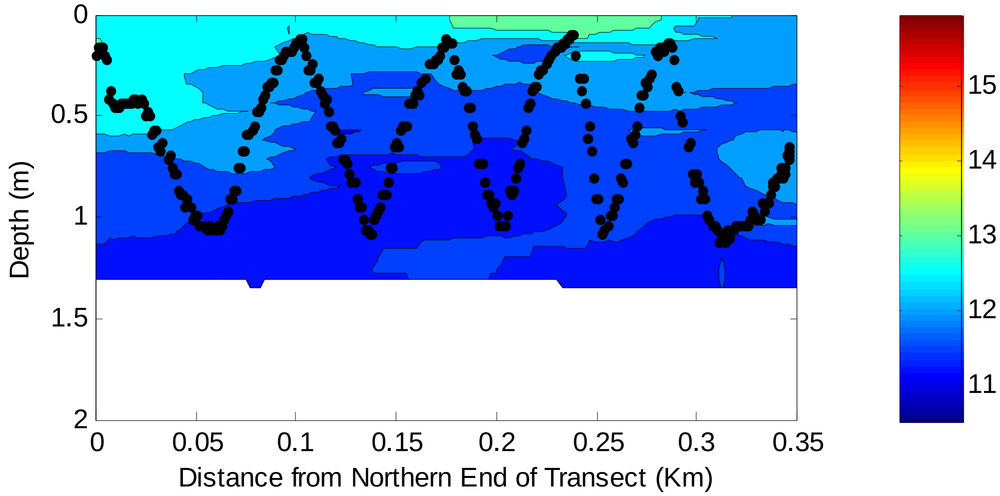

% Transmission: Towyo 17
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20


% Transmission: Towyo 18
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
80
60
40
20

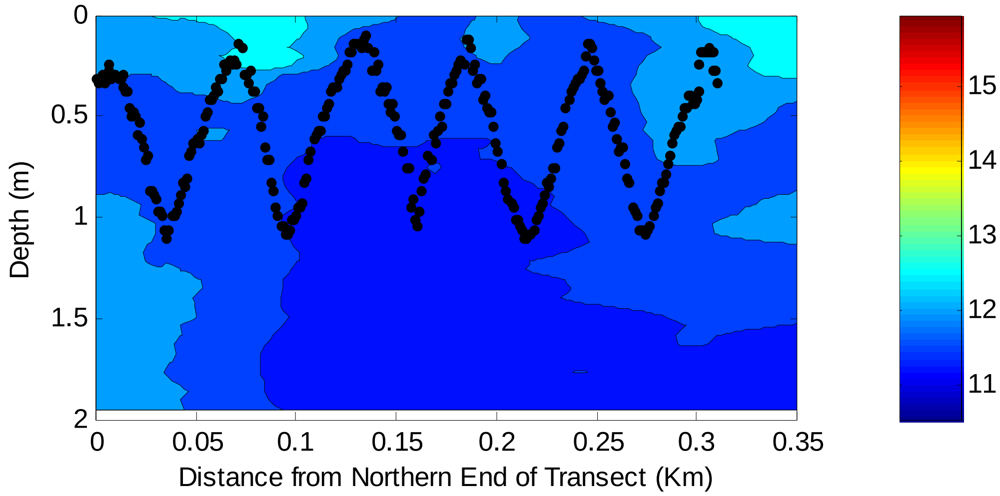

Temperature (°C): Towyo 5
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
15
14
13
12
11


Temperature (°C): Towyo 6
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
15
14
13
12
11

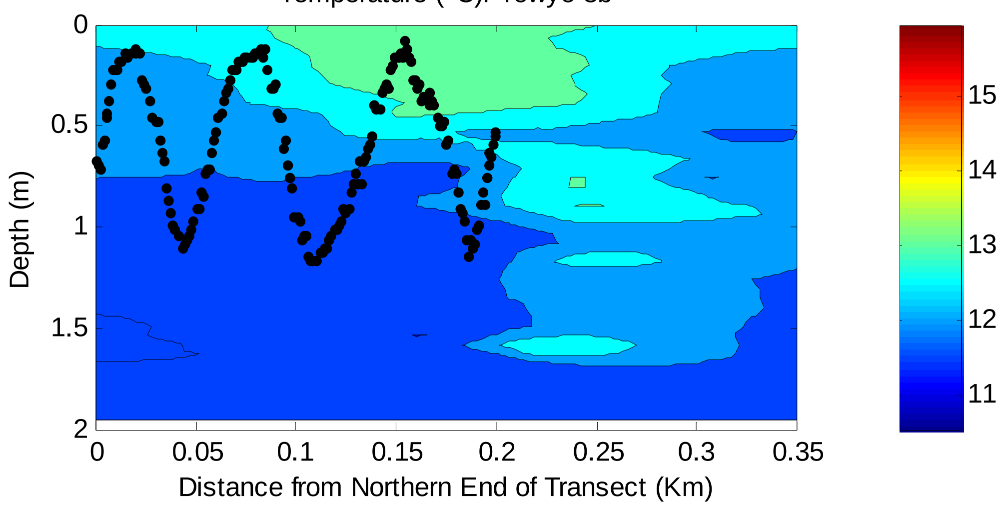
Temperature (^{o}C): Towyo 7

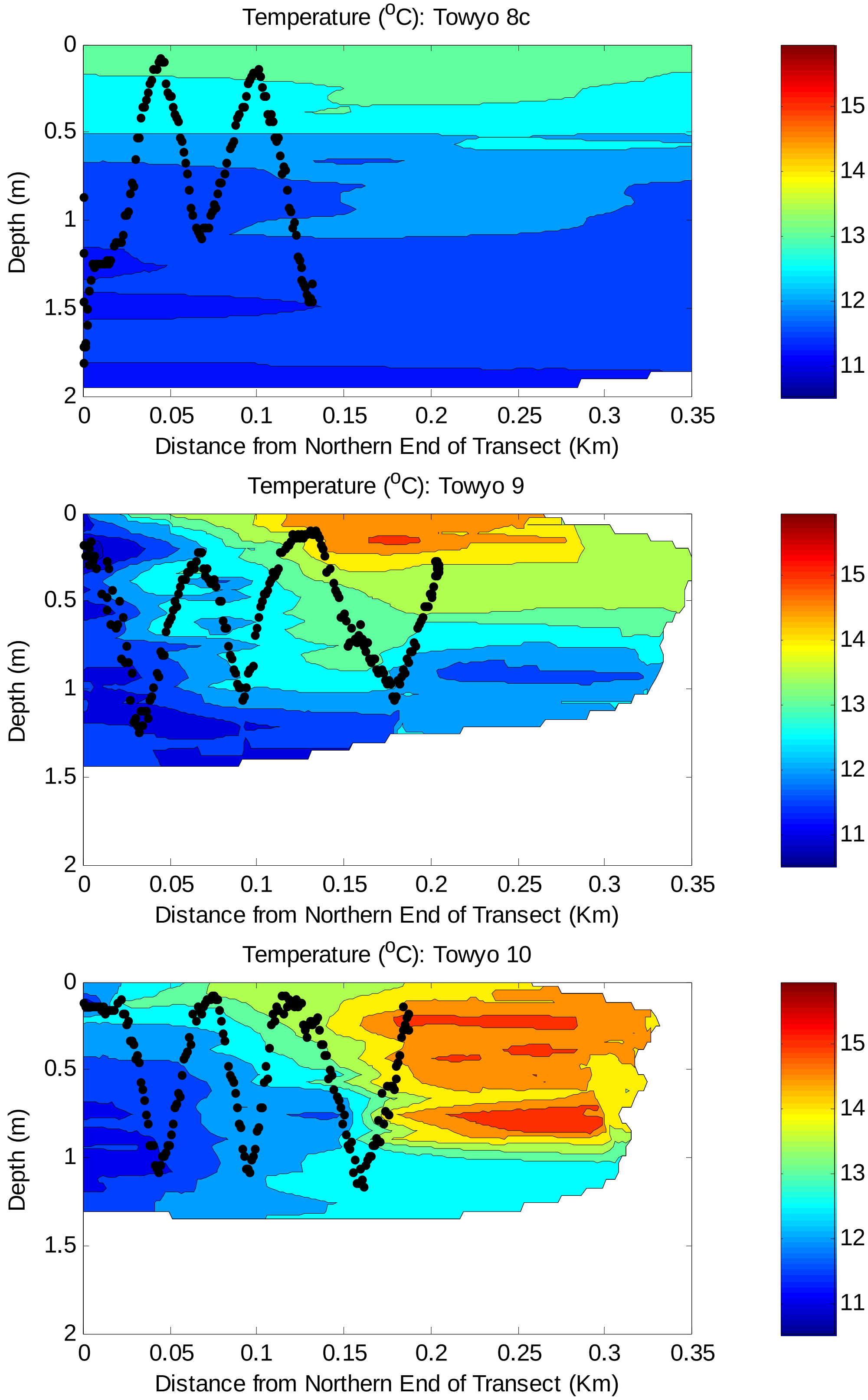


Temperature (^{o}C): Towyo 8a

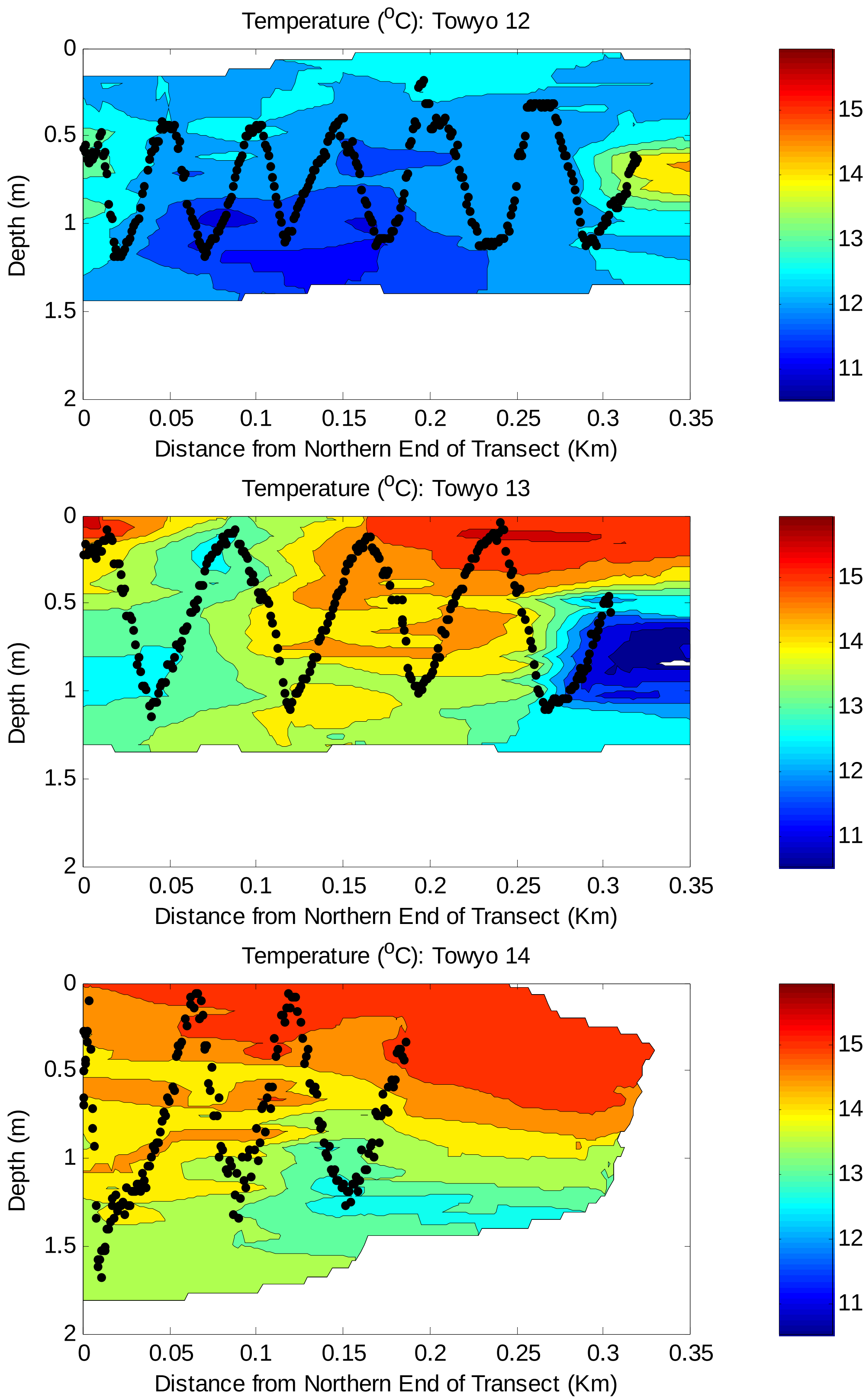


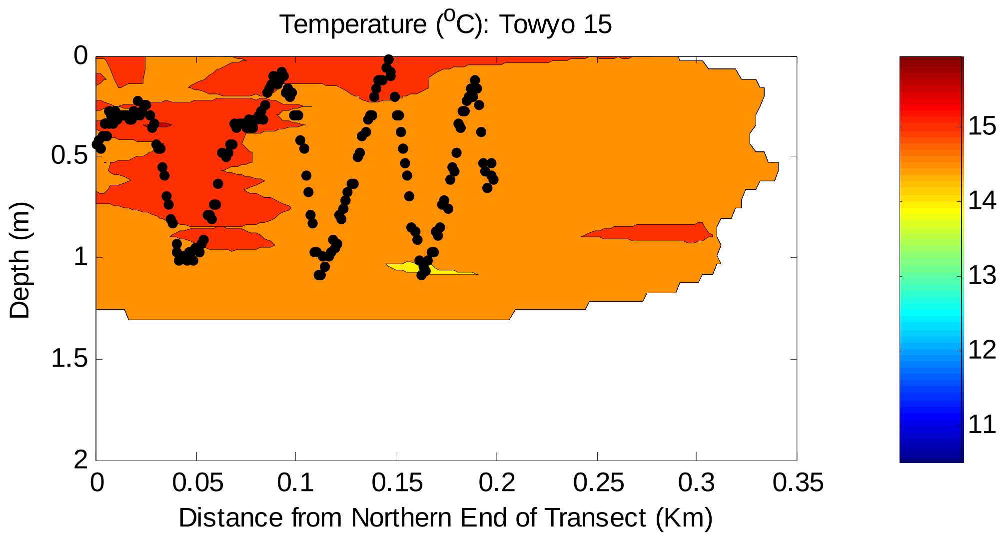
Temperature (^{o}C): Towyo 8b

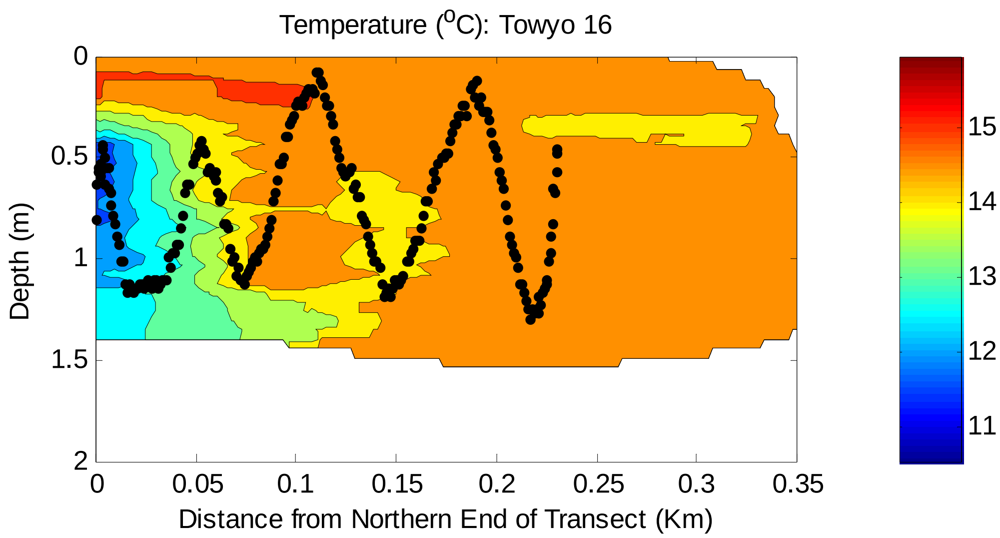


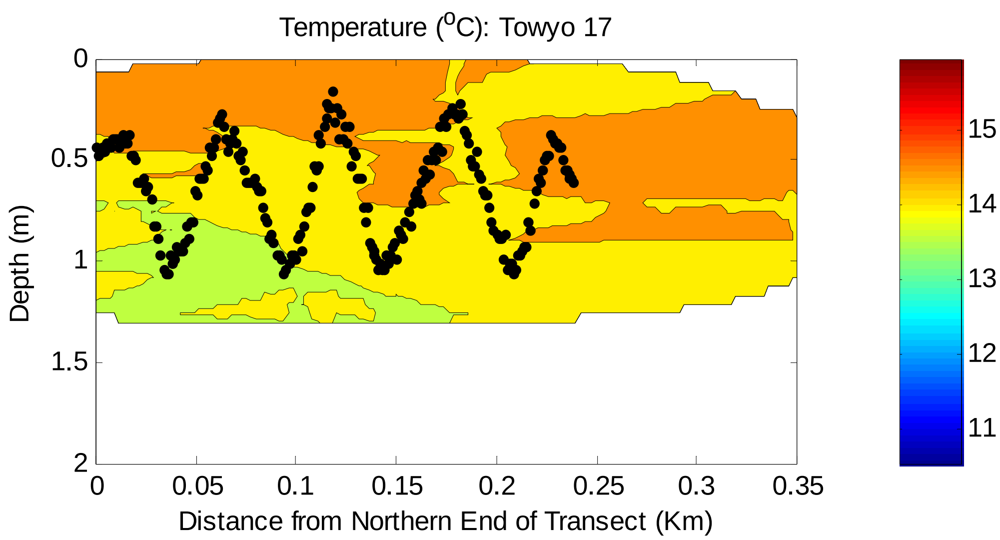


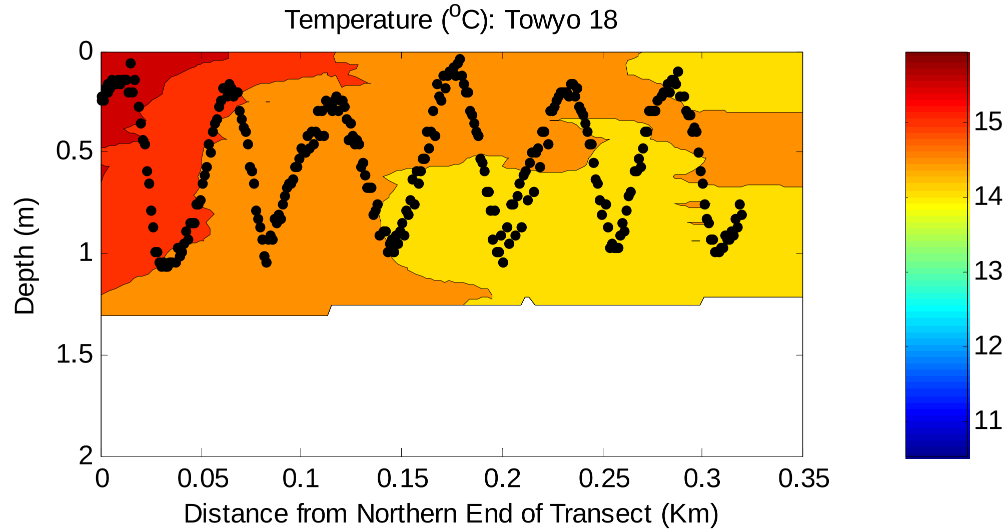
Temperature (°C): Towyo 8c
Depth (m)
Distance from Northern End of Transect (Km)
Temperature (°C): Towyo 9
Depth (m)
Distance from Northern End of Transect (Km)
Temperature (°C): Towyo 10
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
11
12
13
14
15

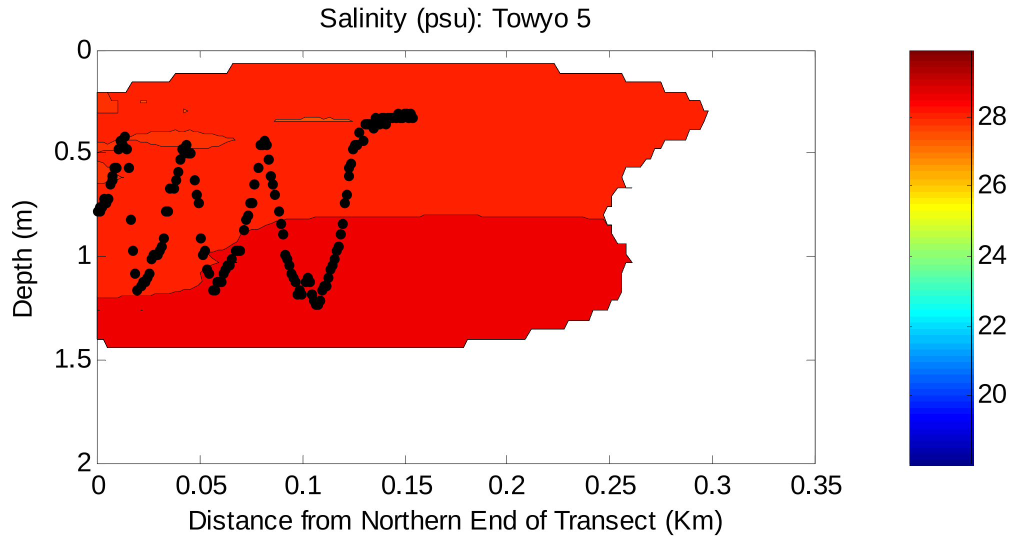

Temperature (°C): Towyo 12
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
15
14
13
12
11
Temperature (°C): Towyo 13
Depth (m)
Distance from Northern End of Transect (Km)
Temperature (°C): Towyo 14
Depth (m)
Distance from Northern End of Transect (Km)

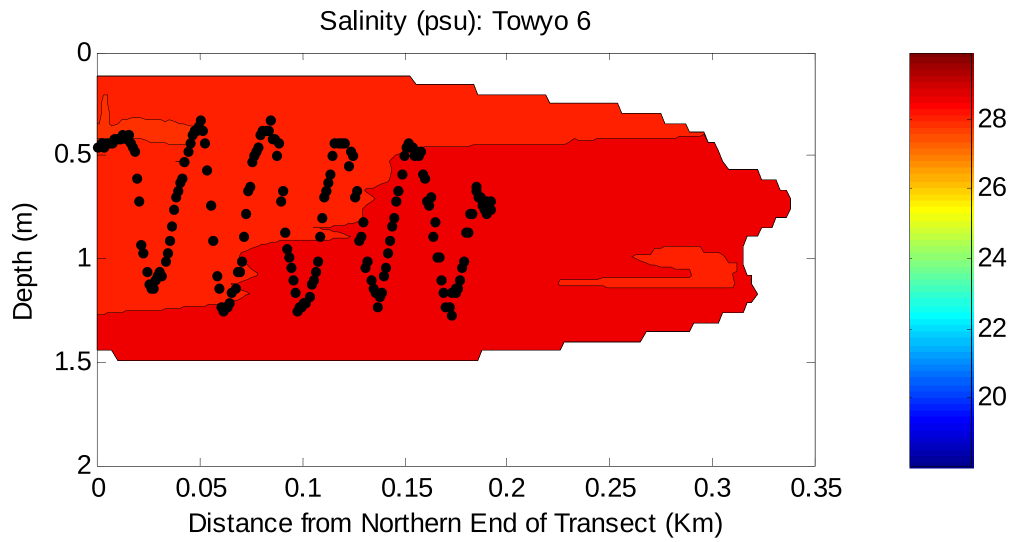

Temperature (°C): Towyo 15
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
15
14
13
12
11

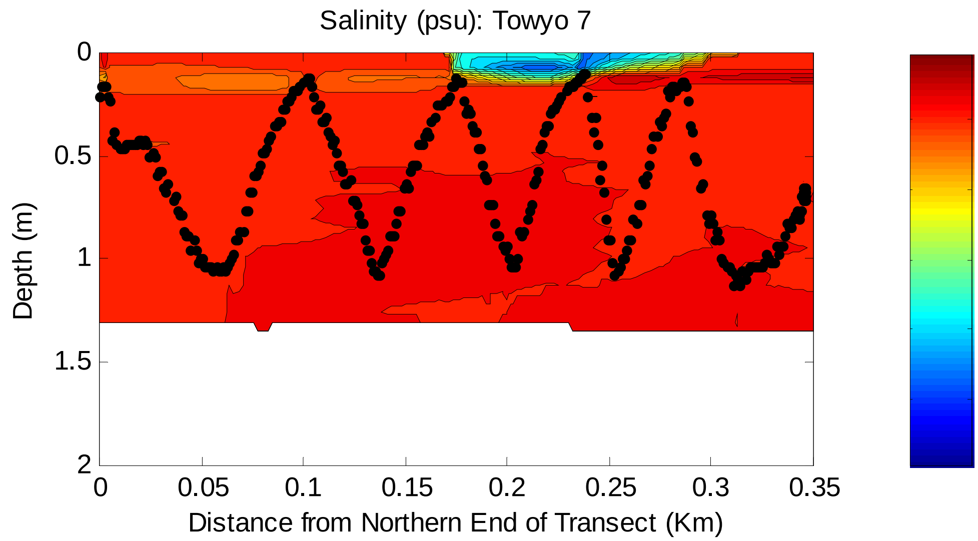

Temperature (°C): Towyo 16
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
15
14
13
12
11

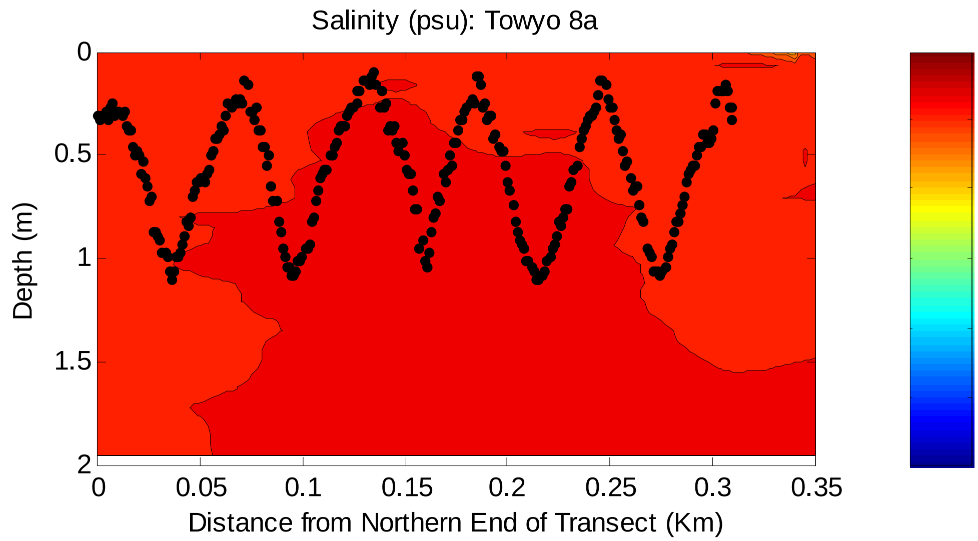

Temperature (°C): Towyo 17
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
15
14
13
12
11

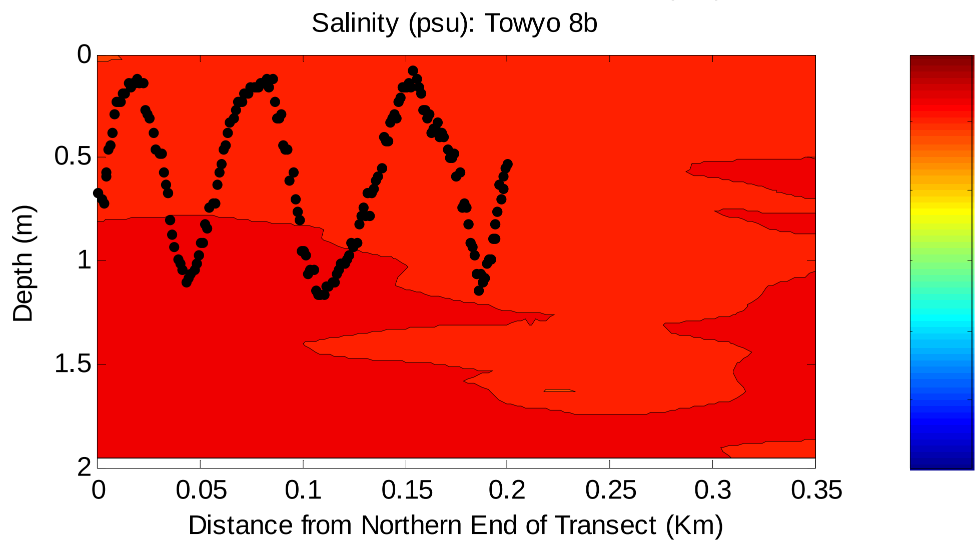

Temperature (^{0}C): Towyo 18
Depth (m)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
15
14
13
12
11

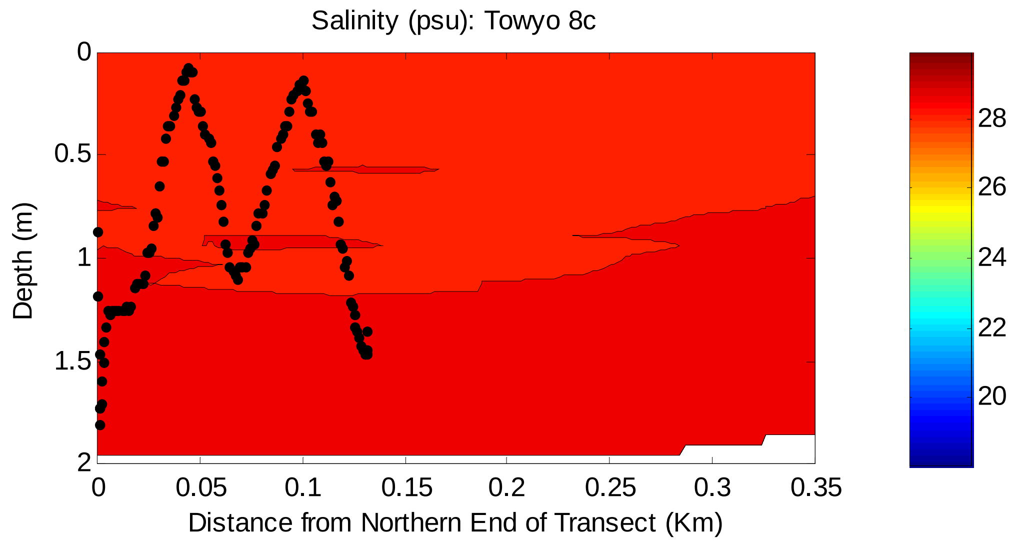

Salinity (psu): Towyo 5
Depth (m)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20


Salinity (psu): Towyo 6
Depth (m)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

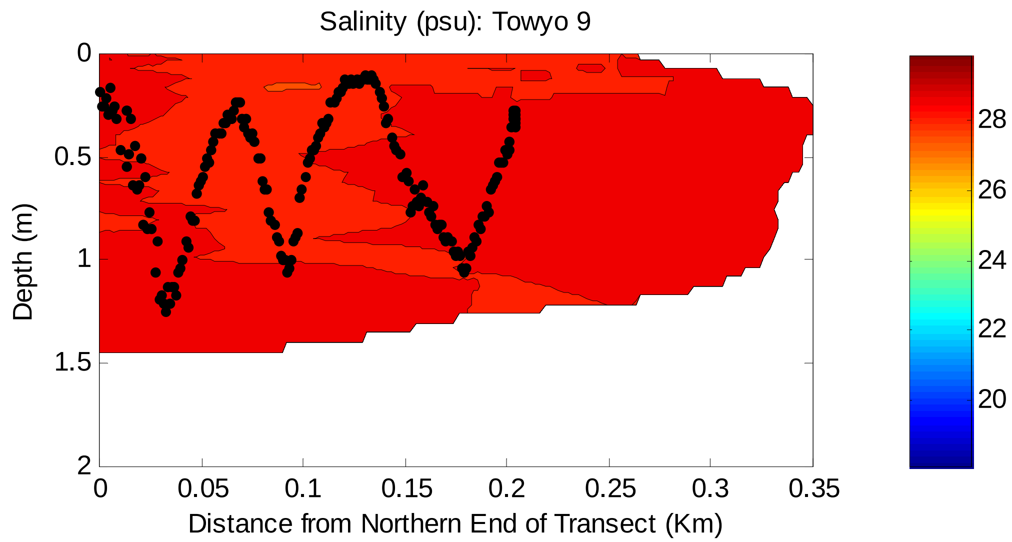

Salinity (psu): Towyo 7
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20


Salinity (psu): Towyo 8a
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

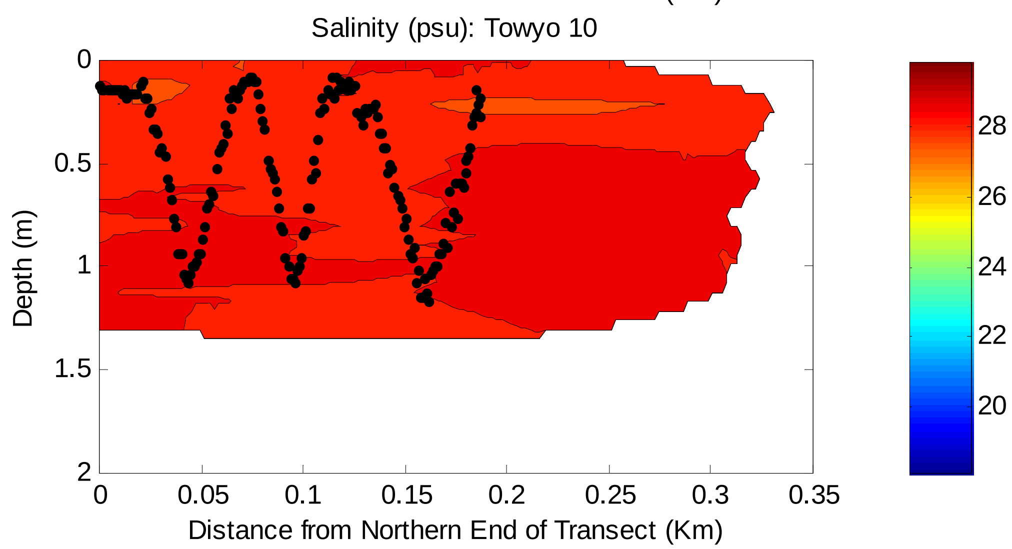

Salinity (psu): Towyo 8b
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20



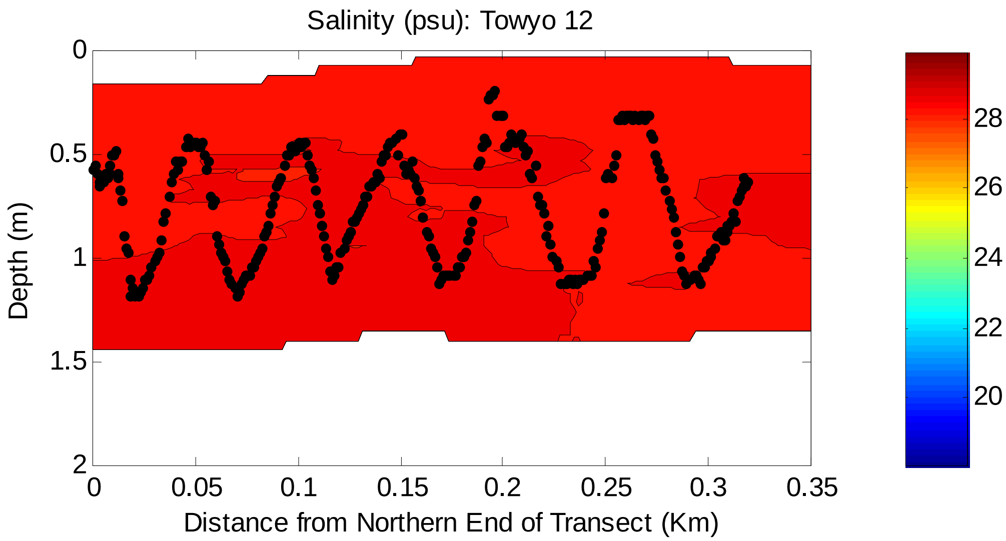
Salinity (psu): Towyo 8c
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
28
26
24
22
20



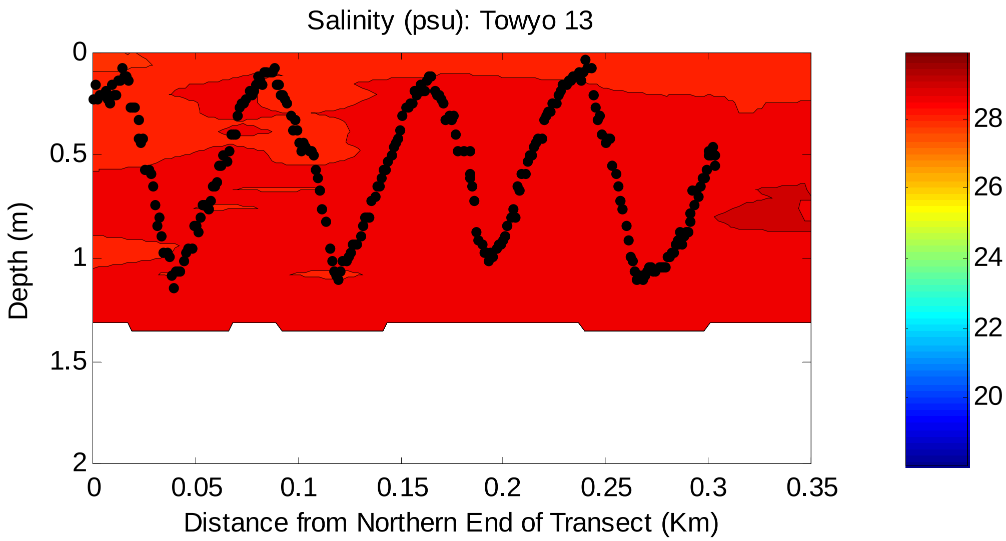
Salinity (psu): Towyo 9
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
28
26
24
22
20



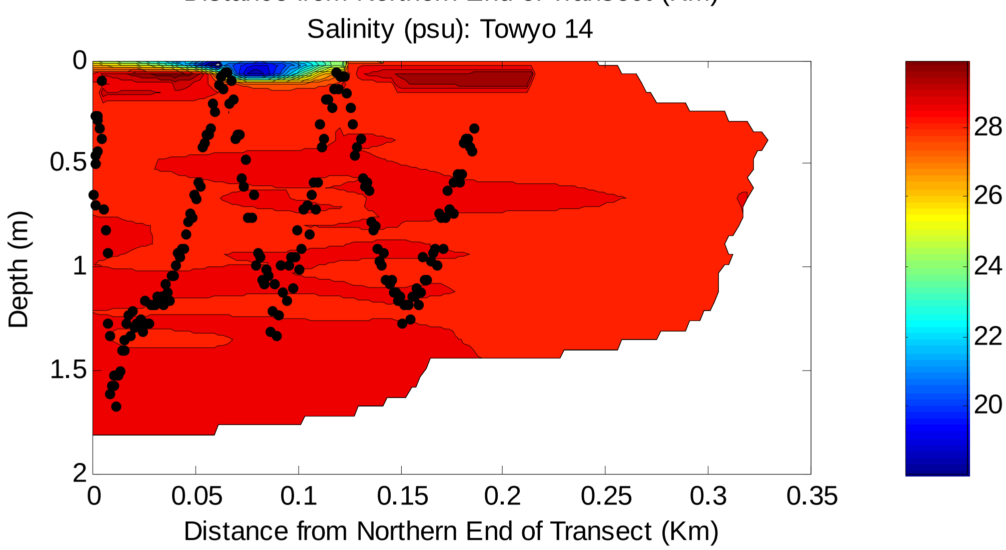
Salinity (psu): Towyo 10
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
28
26
24
22
20



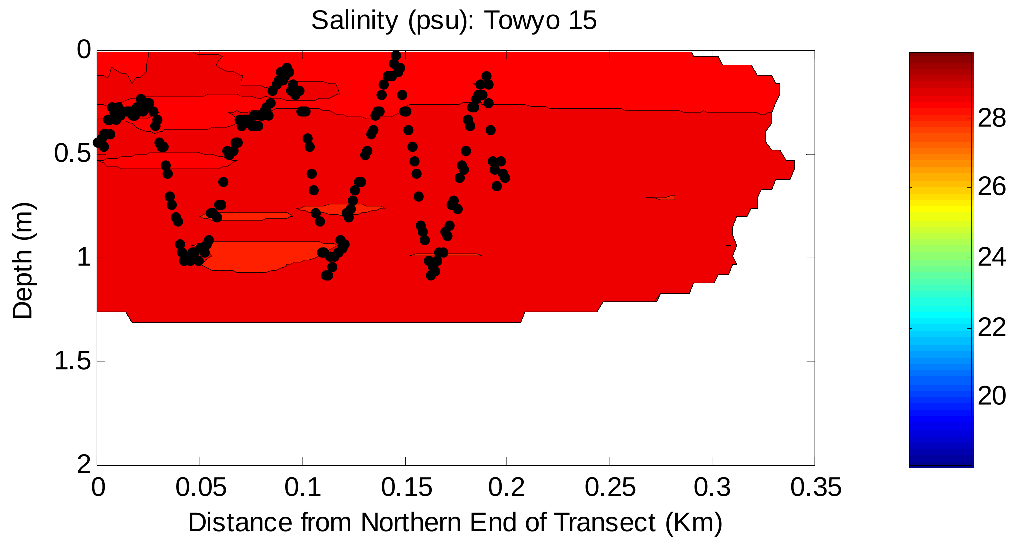
Salinity (psu): Towyo 12
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

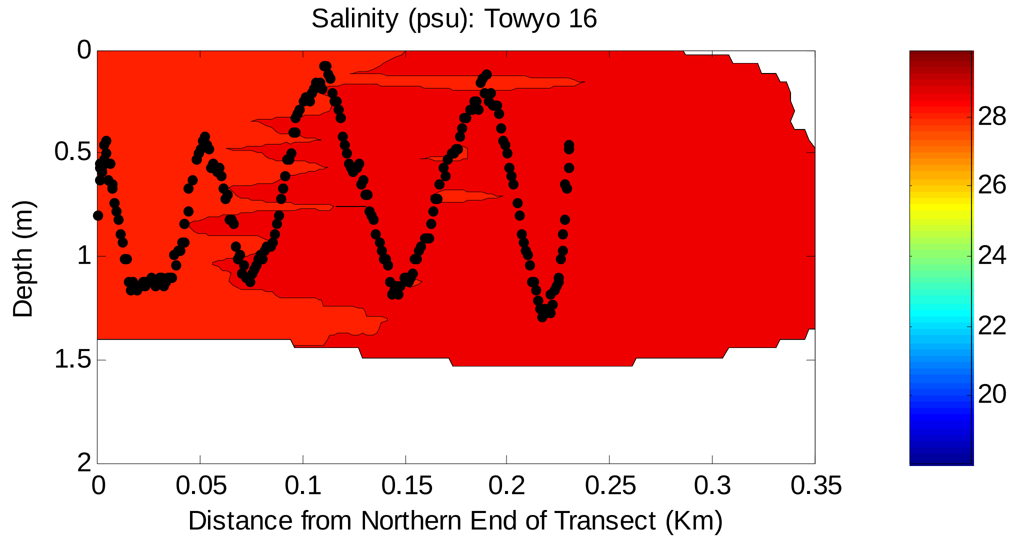


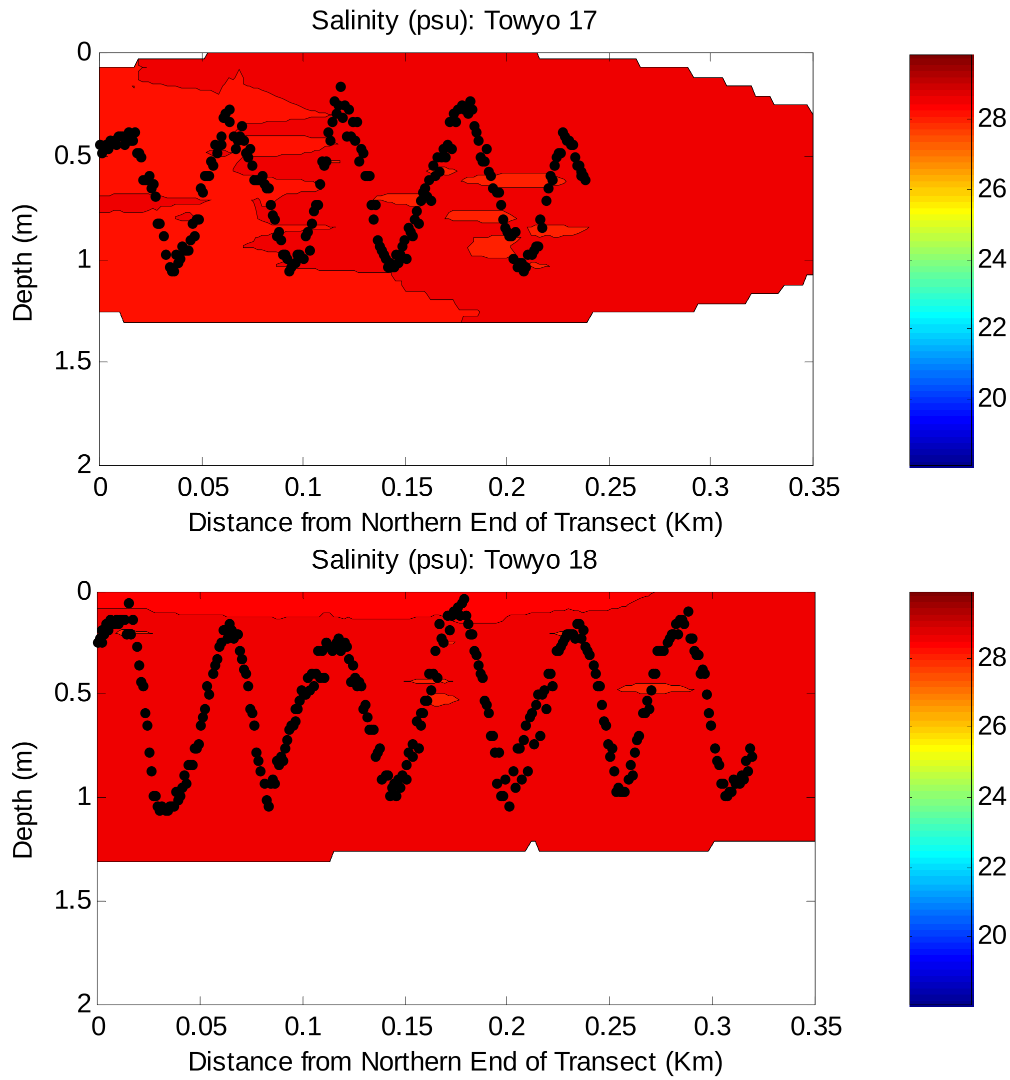
Salinity (psu): Towyo 13
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20



Salinity (psu): Towyo 14
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

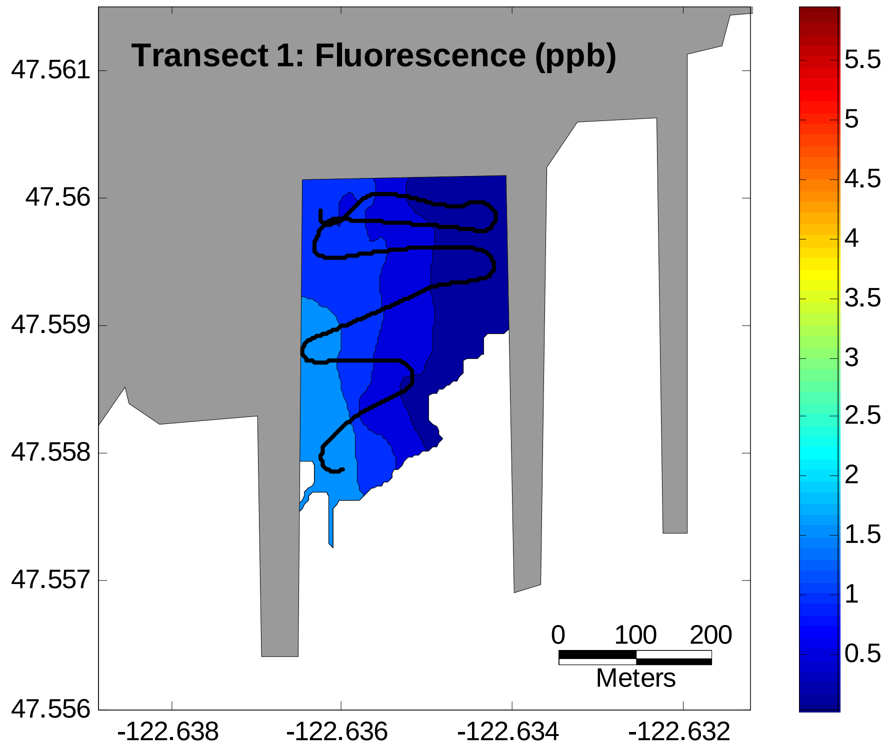

Salinity (psu): Towyo 15
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

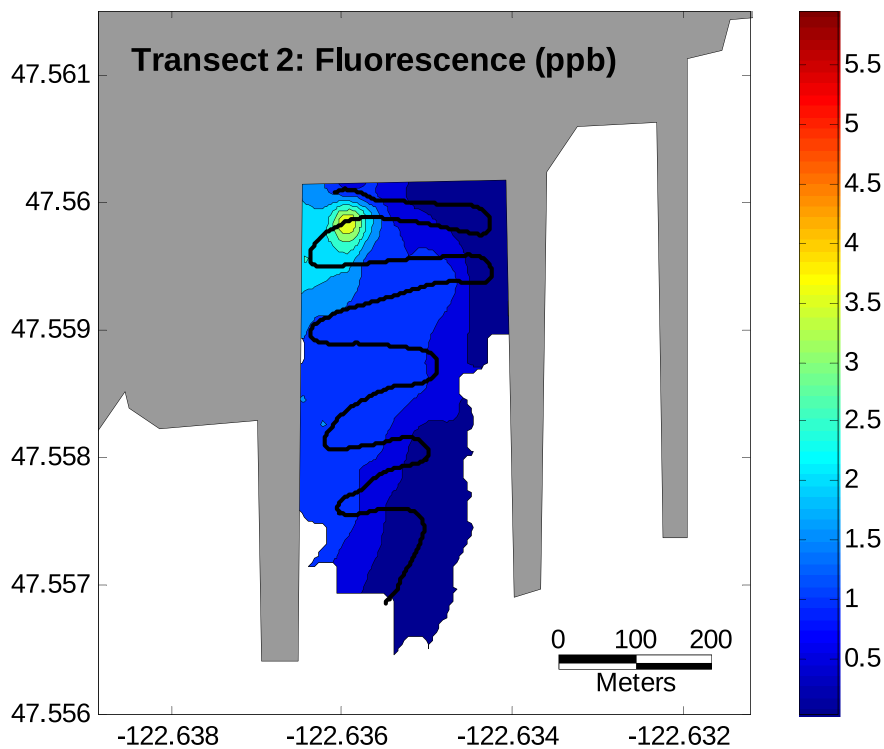

Salinity (psu): Towyo 16
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28
26
24
22
20

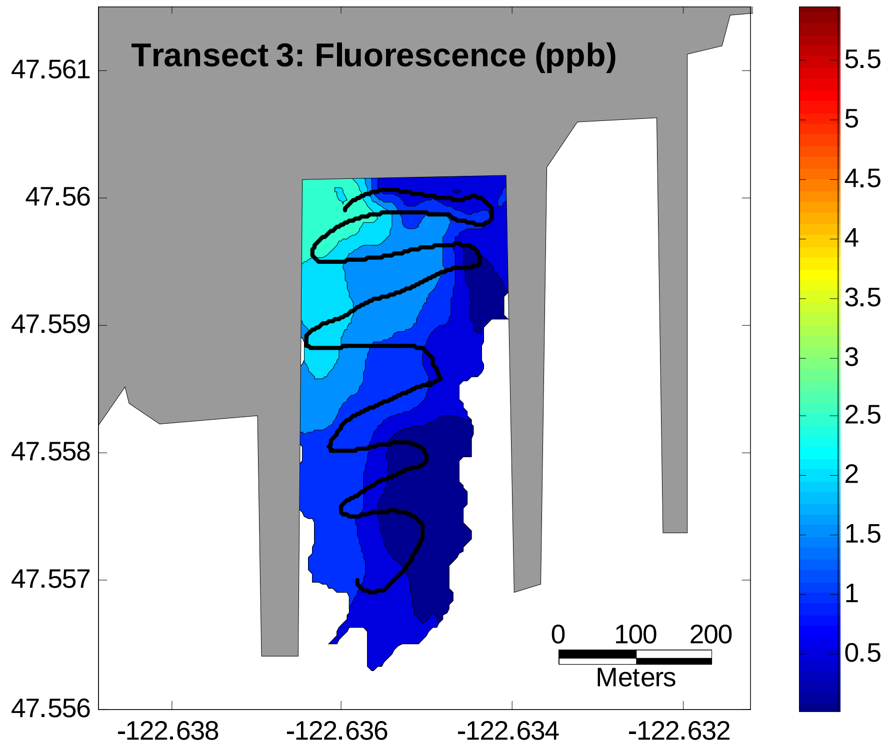

Salinity (psu): Towyo 17
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
28
26
24
22
20
Salinity (psu): Towyo 18
Depth (m)
Distance from Northern End of Transect (Km)

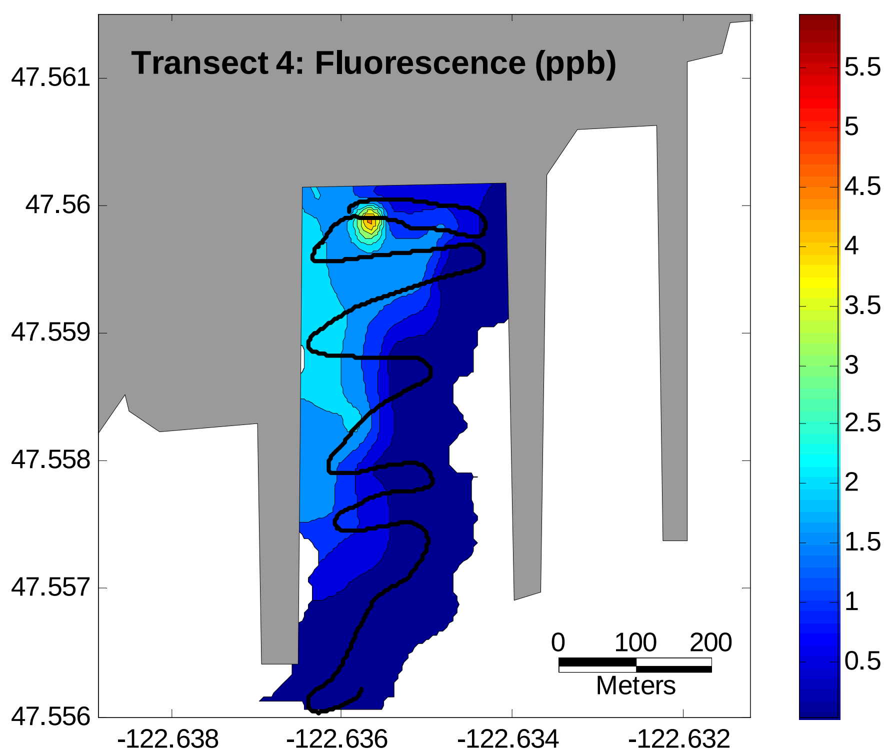
APPENDIX G- RUN 3A TRANSECT DATA

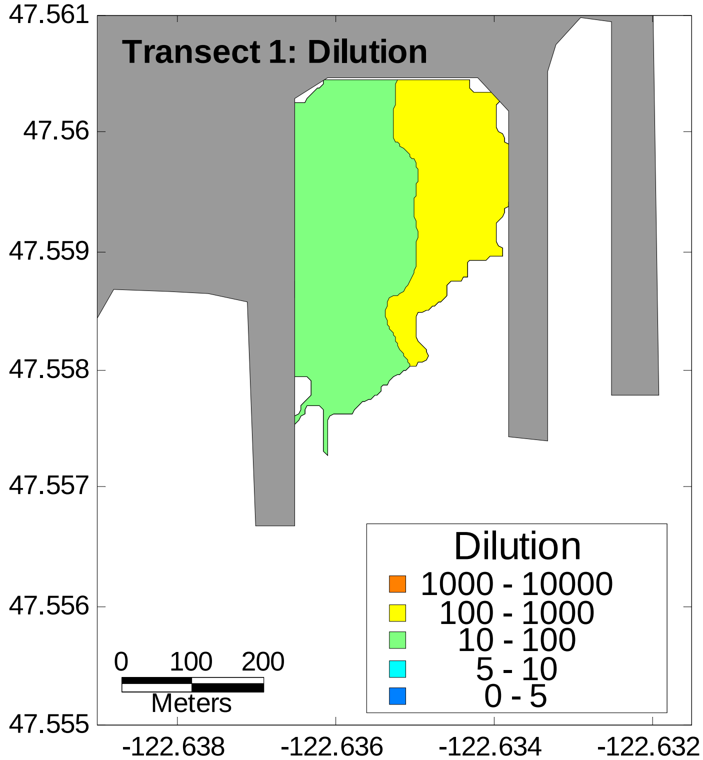
TRANSECT	Start	End	Tide (cm)
1	27.2410	27.2529	228.6
2	27.2576	27.2737	225.6
3	27.2831	27.2990	225.6
4	27.3123	27.3268	228.6

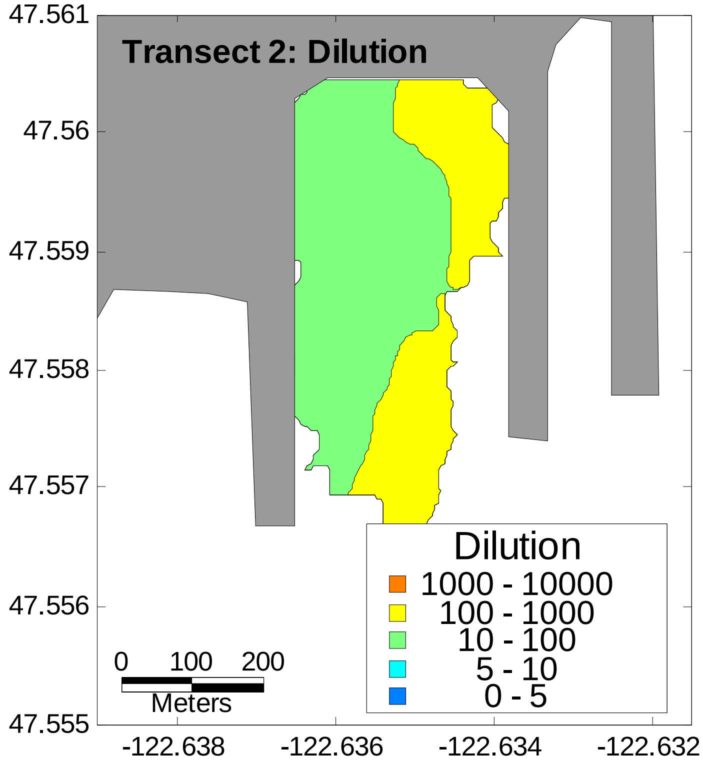

Transect 1: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

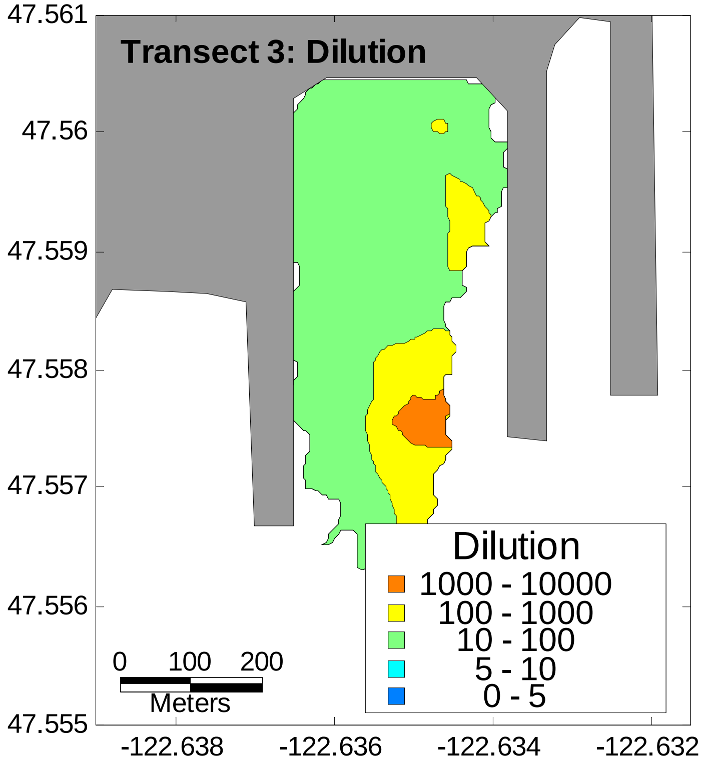

Transect 2: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

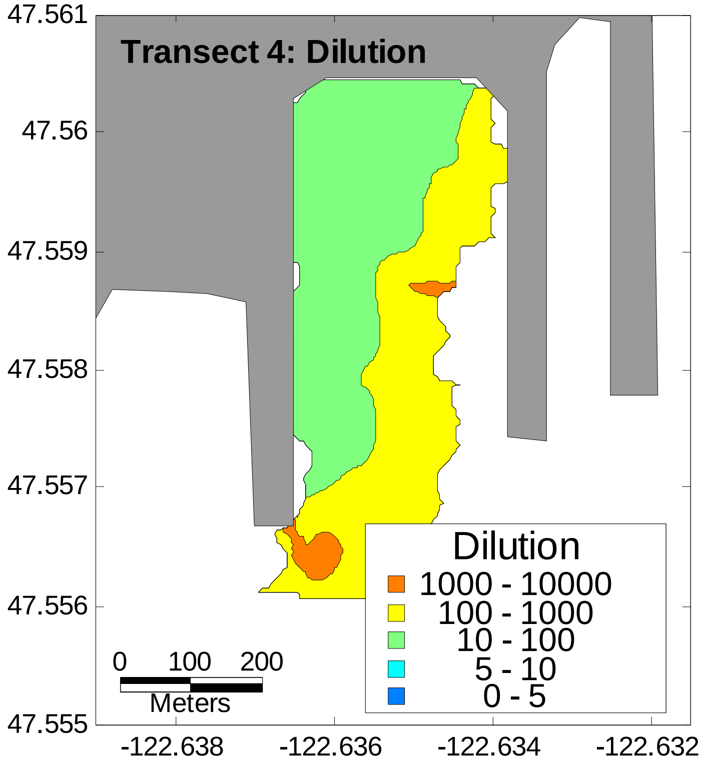

Transect 3: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

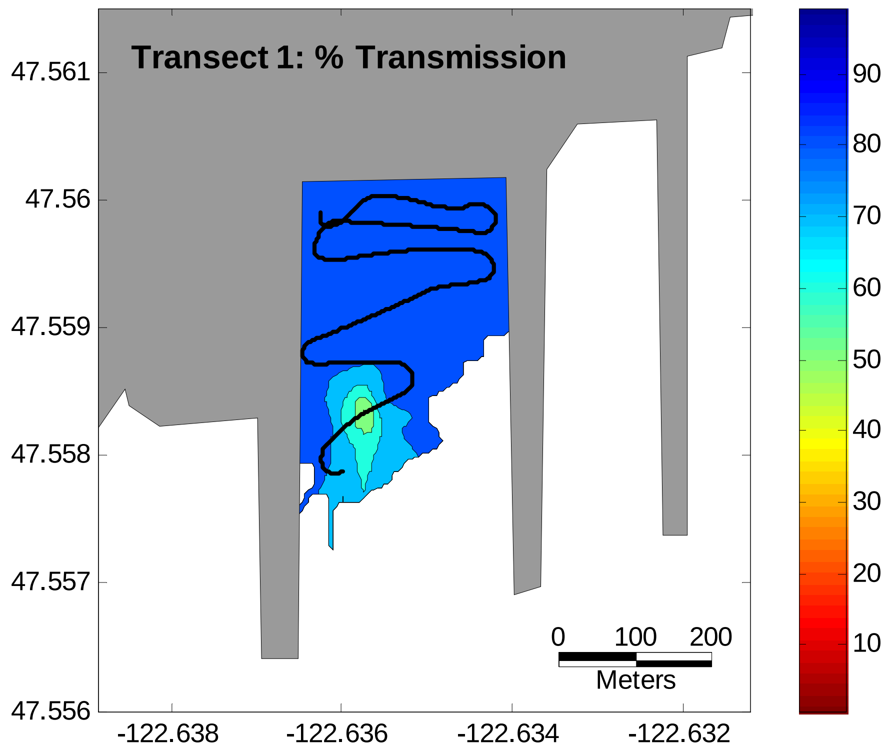

Transect 4: Fluorescence (ppb)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
5.5
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5

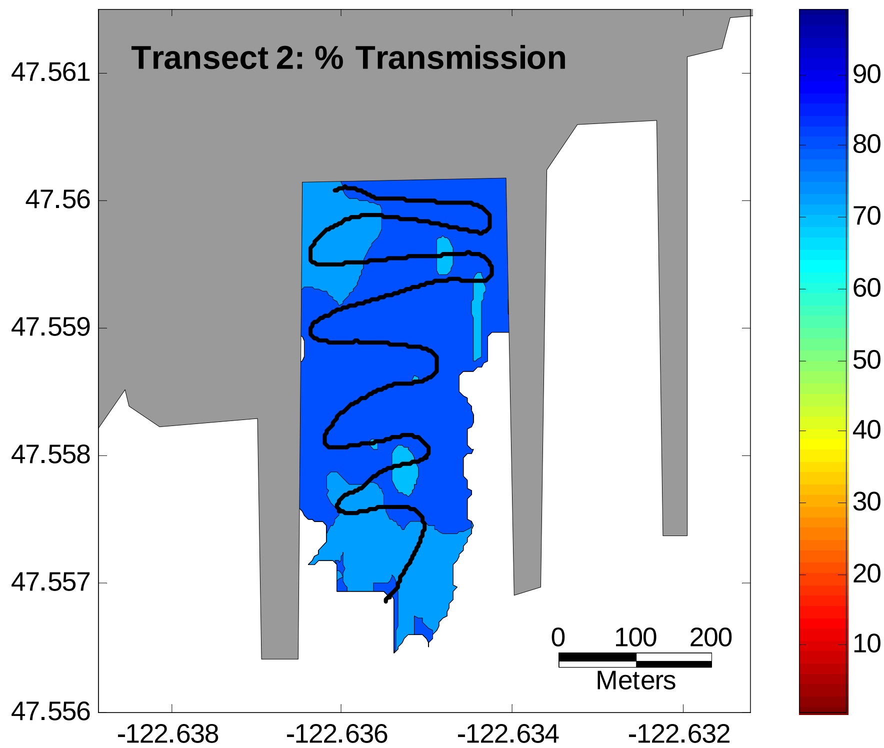

Transect 1: Dilution
47.561
47.56
47.559
47.558
47.557
47.556
47.555
-122.638
-122.636
-122.634
-122.632
Dilution
1000 - 10000
100 - 1000
10 - 100
5 - 10
0 - 5
0 100 200
Meters

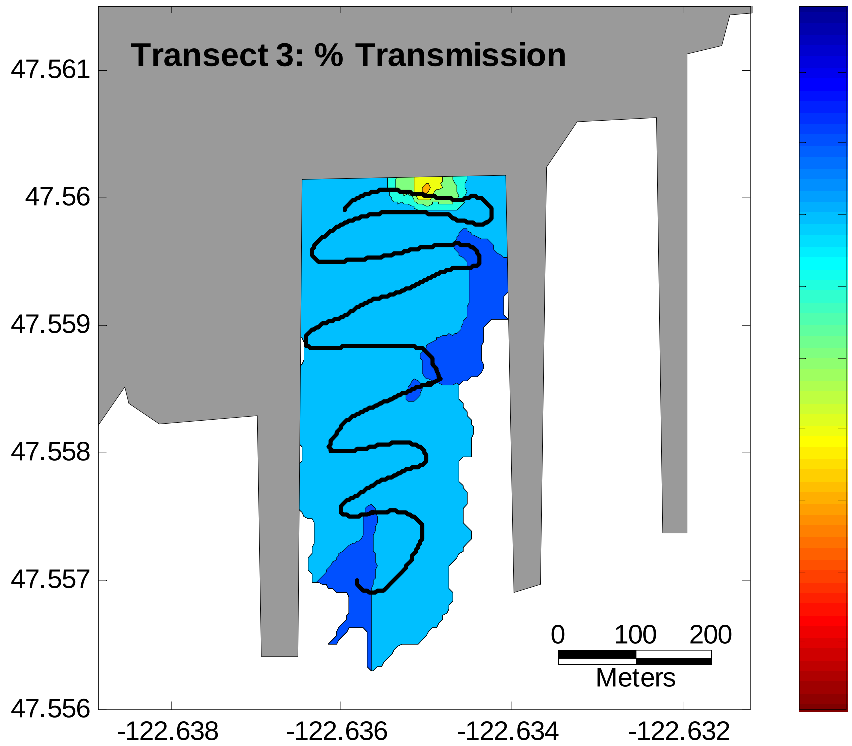

Transect 2: Dilution
47.561
47.56
47.559
47.558
47.557
47.556
47.555
-122.638
-122.636
-122.634
-122.632
Dilution
1000 - 10000
100 - 1000
10 - 100
5 - 10
0 - 5
0 100 200
Meters

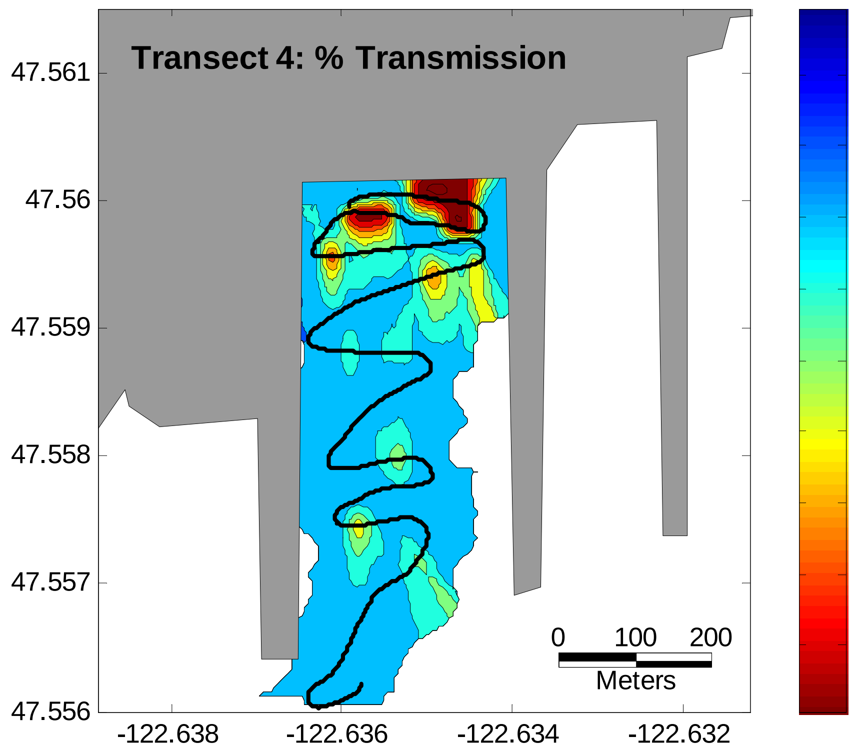

Transect 3: Dilution
47.561
47.56
47.559
47.558
47.557
47.556
47.555
-122.638
-122.636
-122.634
-122.632
Dilution
1000 - 10000
100 - 1000
10 - 100
5 - 10
0 - 5
0 100 200
Meters

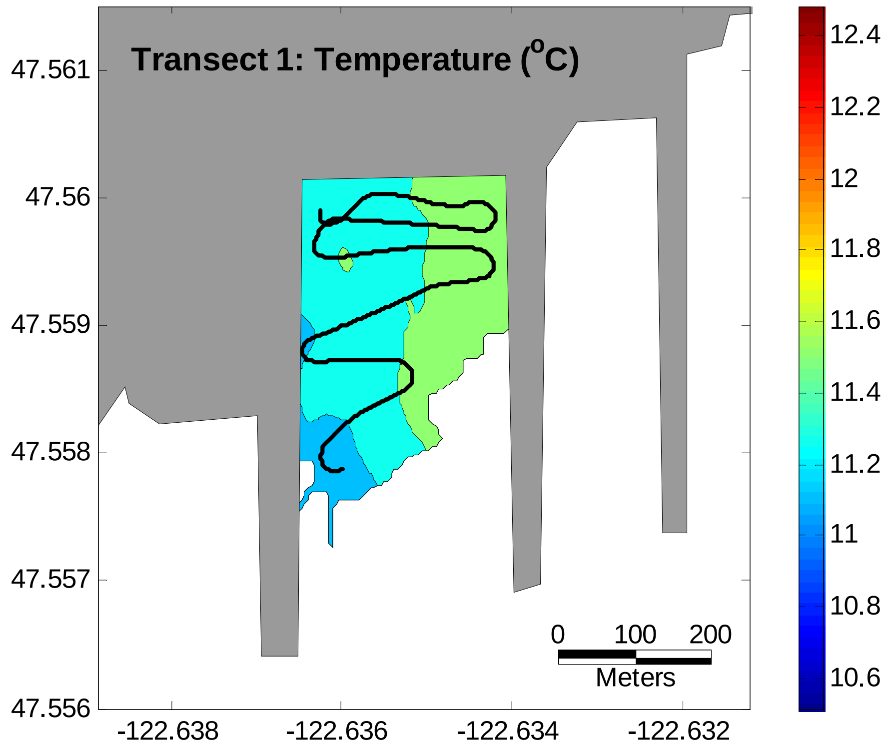

Transect 4: Dilution
47.561
47.56
47.559
47.558
47.557
47.556
47.555
-122.638
-122.636
-122.634
-122.632
Dilution
1000 - 10000
100 - 1000
10 - 100
5 - 10
0 - 5
0 100 200
Meters

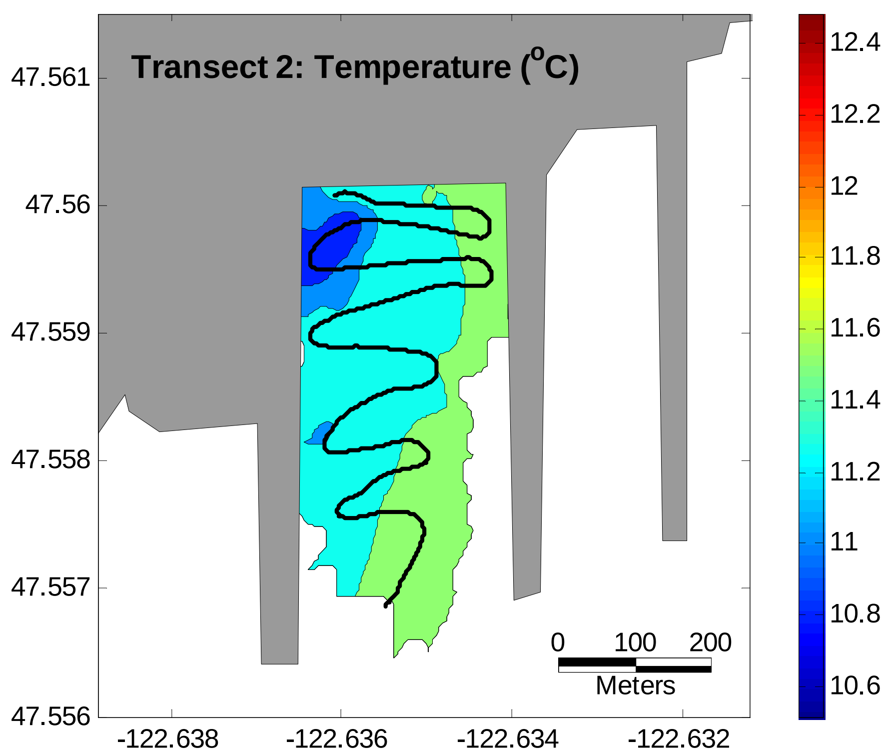

Transect 1: % Transmission
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
90
80
70
60
50
40
30
20
10

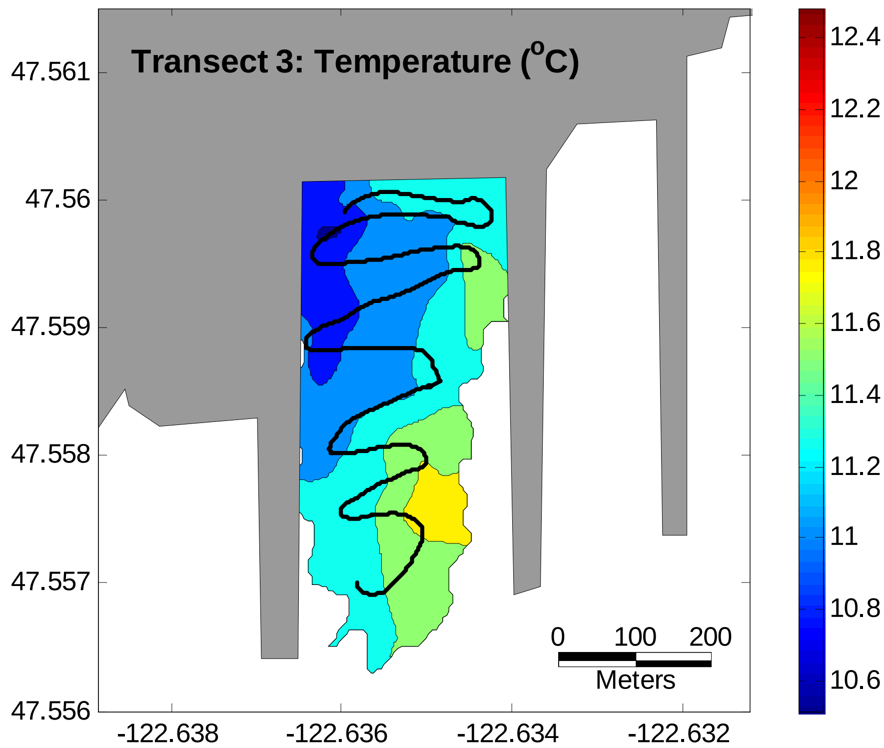

Transect 2: % Transmission
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
90
80
70
60
50
40
30
20
10


Transect 3: % Transmission
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
90
80
70
60
50
40
30
20
10

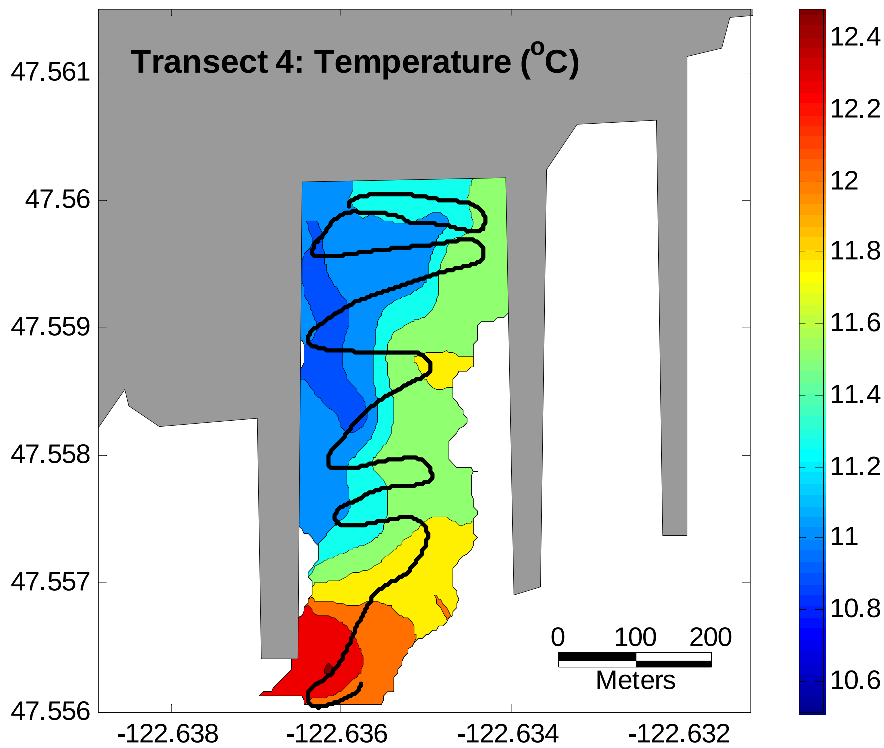

Transect 4: % Transmission
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
90
80
70
60
50
40
30
20
10


Transect 1: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
12.4
12.2
12
11.8
11.6
11.4
11.2
11
10.8
10.6

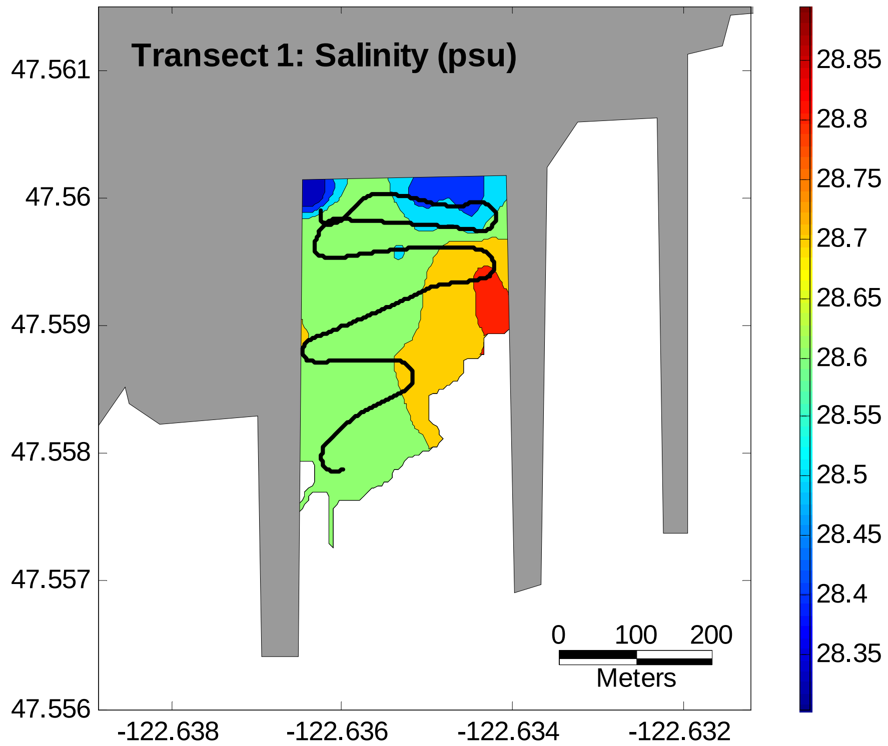

Transect 2: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
12.4
12.2
12
11.8
11.6
11.4
11.2
11
10.8
10.6

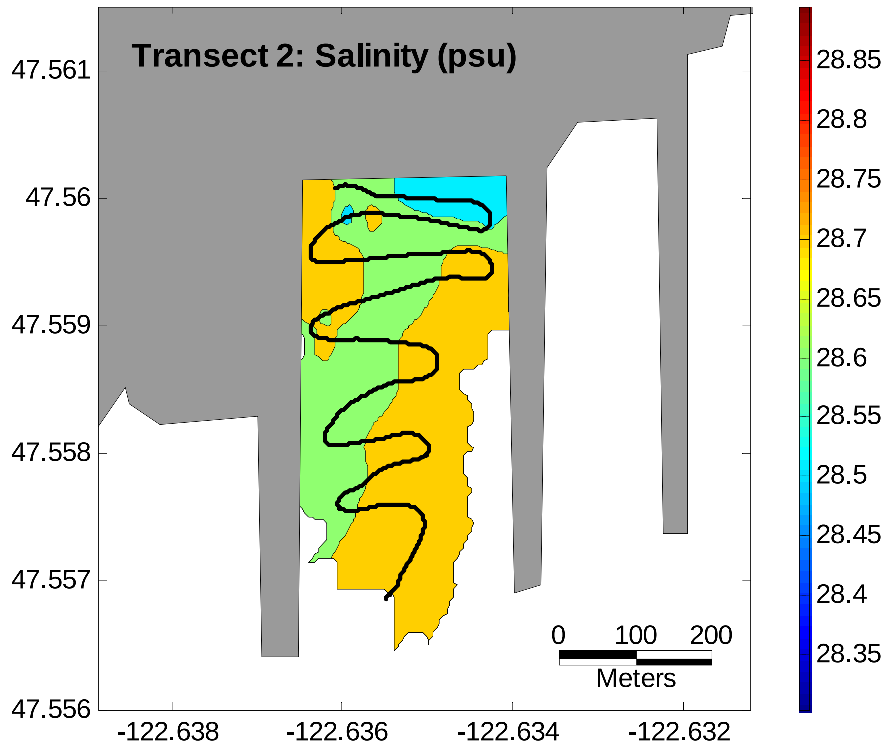


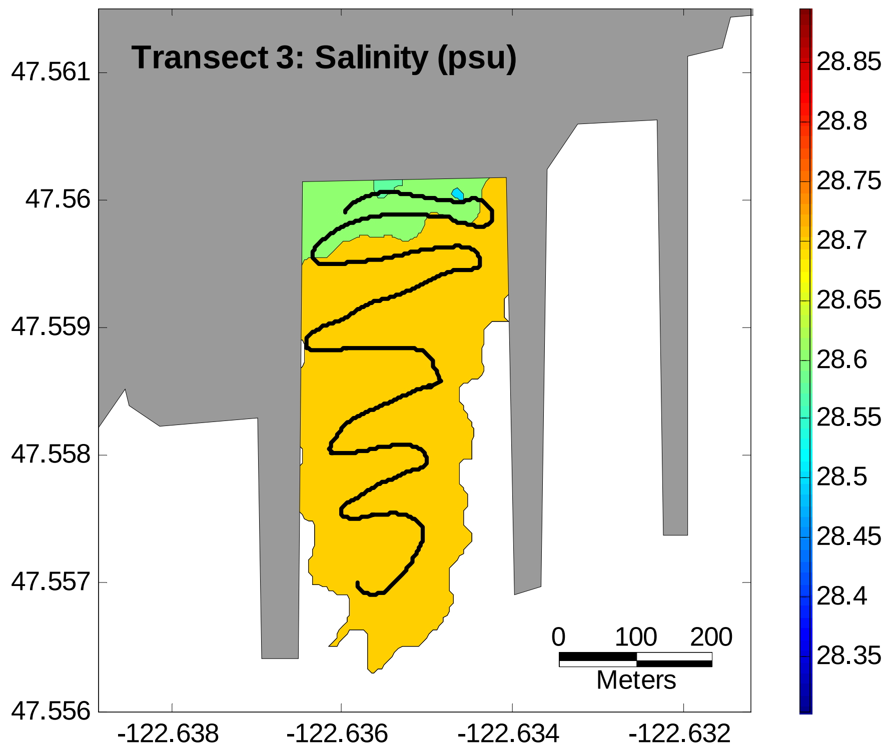
Transect 3: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
12.4
12.2
12
11.8
11.6
11.4
11.2
11
10.8
10.6

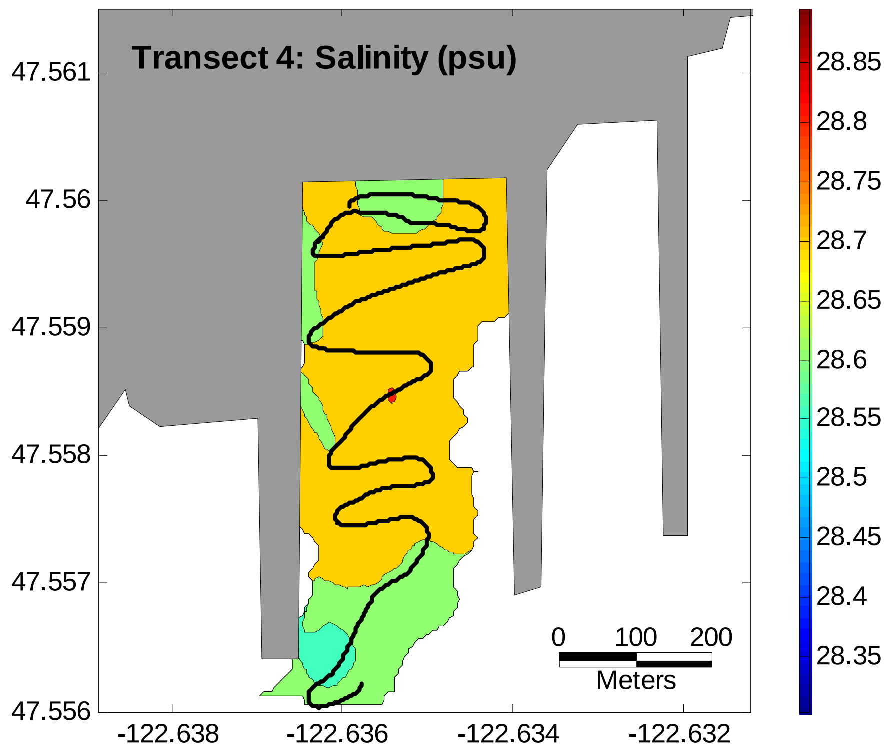


Transect 4: Temperature (^oC)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0 100 200
Meters
12.4
12.2
12
11.8
11.6
11.4
11.2
11
10.8
10.6


Transect 1: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.85
28.8
28.75
28.7
28.65
28.6
28.55
28.5
28.45
28.4
28.35

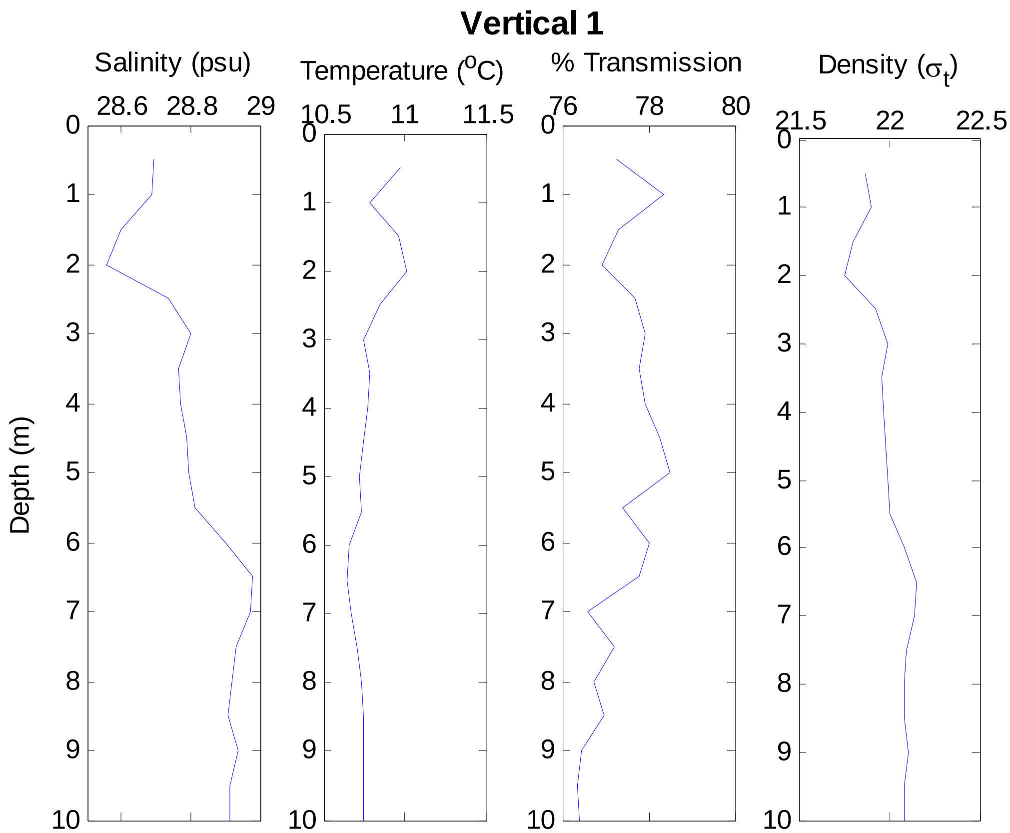

Transect 2: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.85
28.8
28.75
28.7
28.65
28.6
28.55
28.5
28.45
28.4
28.35

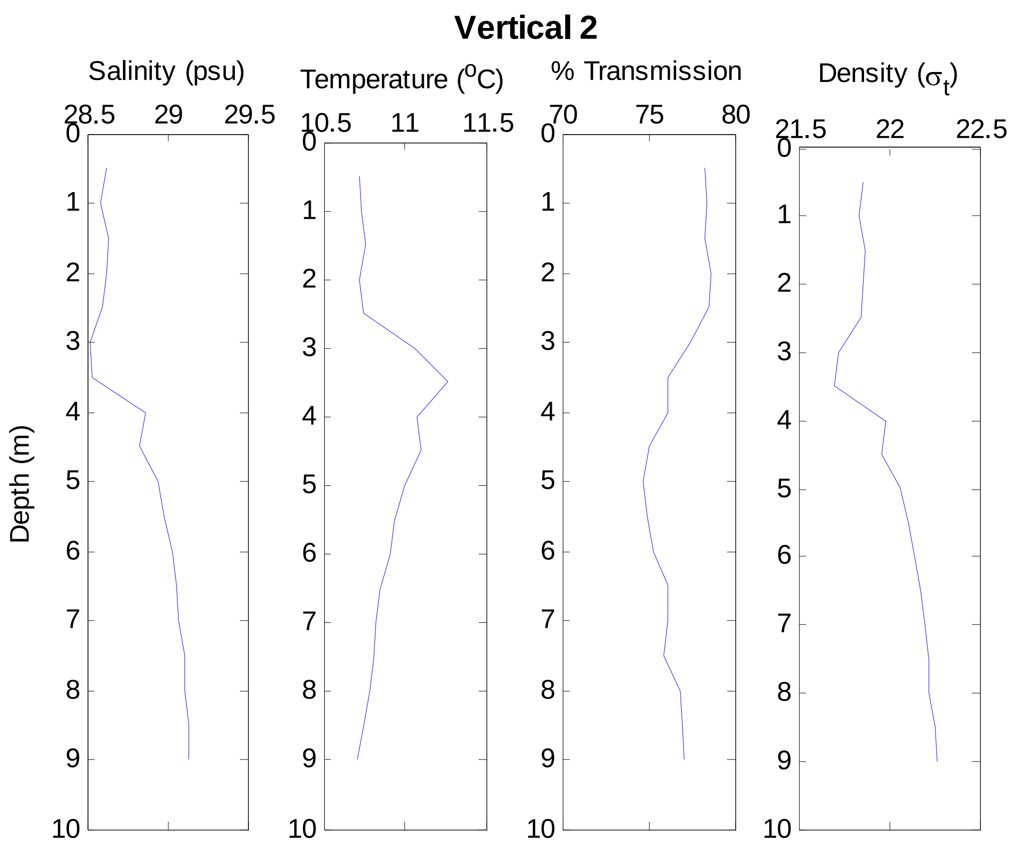

Transect 3: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.85
28.8
28.75
28.7
28.65
28.6
28.55
28.5
28.45
28.4
28.35


Transect 4: Salinity (psu)
47.561
47.56
47.559
47.558
47.557
47.556
-122.638
-122.636
-122.634
-122.632
0
100
200
Meters
28.85
28.8
28.75
28.7
28.65
28.6
28.55
28.5
28.45
28.4
28.35

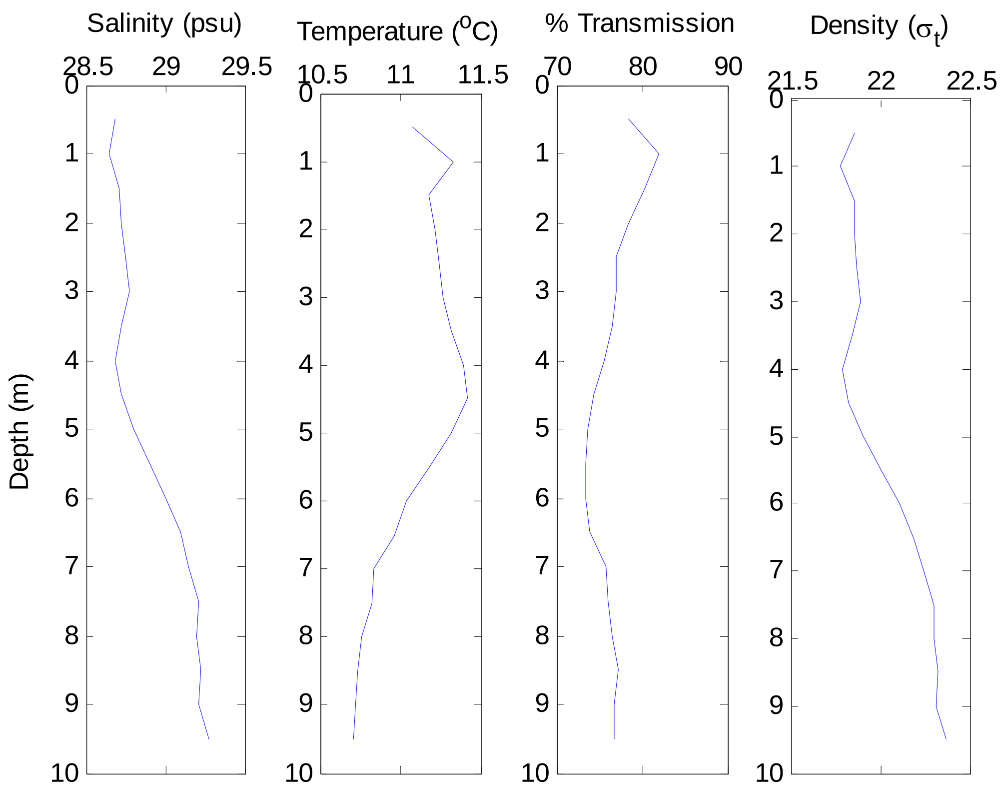
APPENDIX H- RUN 3A VERTICAL DATA

VERTICAL	Start	End	Tide (cm)
1	27.2555	27.2575	225.6
2	27.2806	27.2831	225.6
3	27.3098	27.3122	225.6

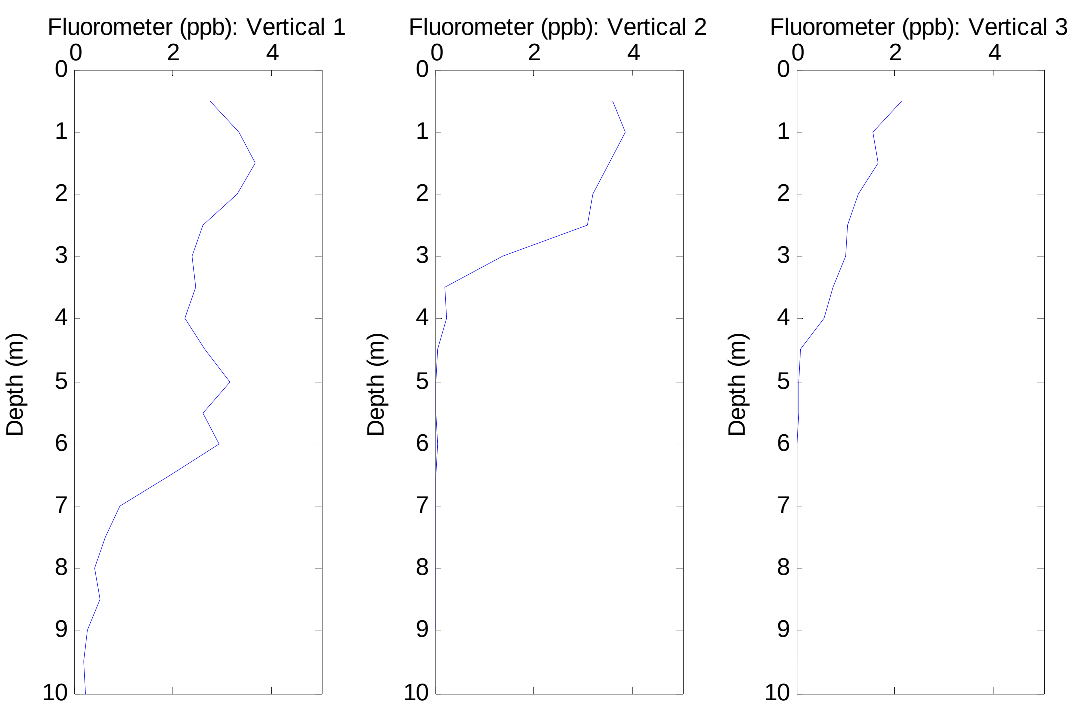

Vertical 1
Salinity (psu)
28.6
28.8
29
Temperature (°C)
10.5
11
11.5
% Transmission
76
78
80
Density (σt)
21.5
22
22.5
Depth (m)
0
1
2
3
4
5
6
7
8
9
10


Vertical 2
Salinity (psu)
28.5
29
29.5
Temperature (°C)
10.5
11
11.5
% Transmission
70
75
80
Density (σt)
21.5
22
22.5
Depth (m)
0
1
2
3
4
5
6
7
8
9
10

Vertical 3



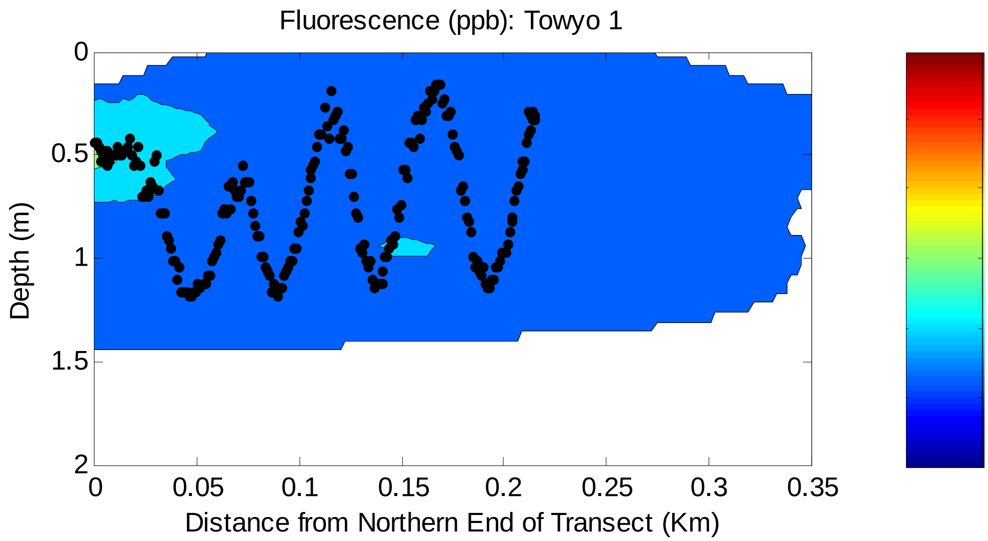
Salinity (psu)
28.5
29
29.5
Temperature (^oC)
10.5
11
11.5
% Transmission
70
80
90
Density (σ_t)
21.5
22
22.5
Depth (m)
0
1
2
3
4
5
6
7
8
9
10

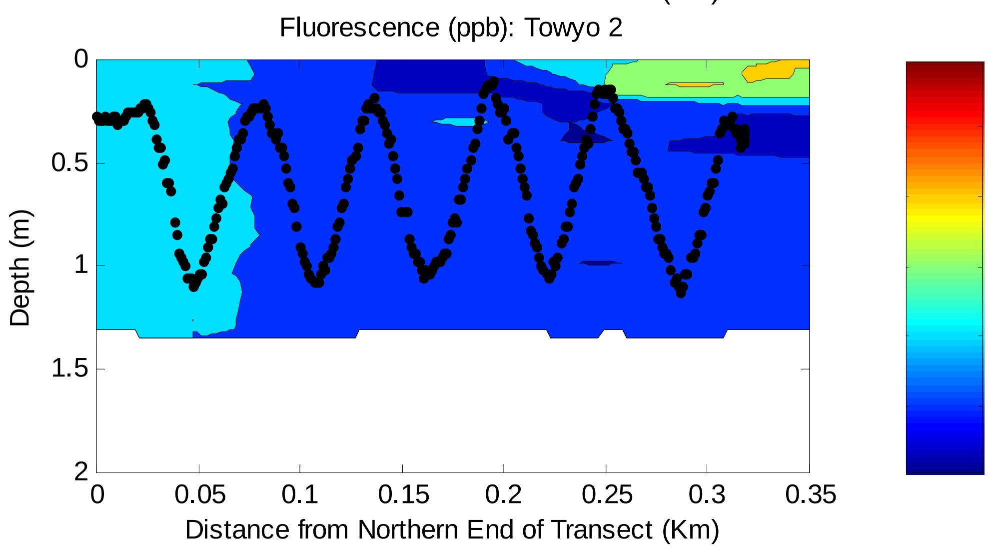


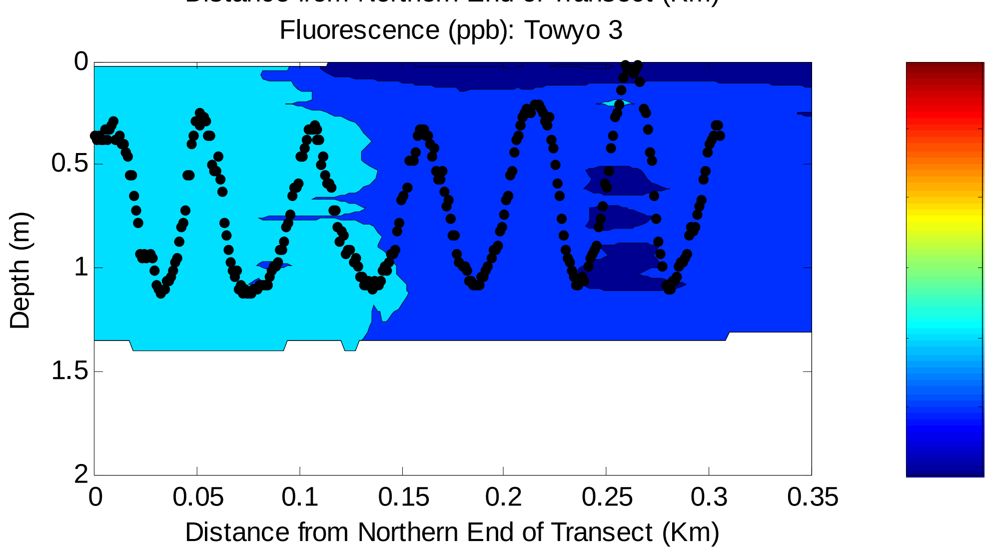
Fluorometer (ppb): Vertical 1
Fluorometer (ppb): Vertical 2
Fluorometer (ppb): Vertical 3
0
2
4
Depth (m)
0
1
2
3
4
5
6
7
8
9
10

APPENDIX I- RUN 3A TOW YO DATA

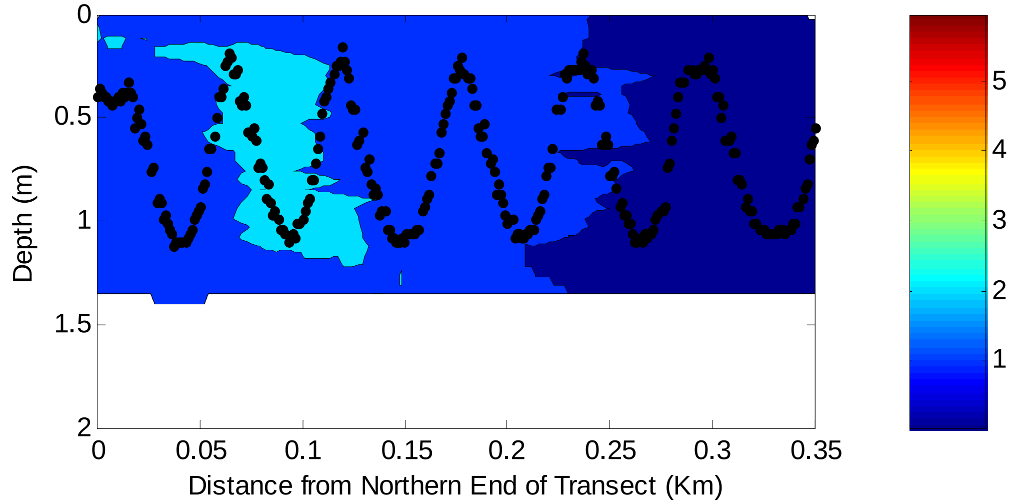
TOWYO	Start	End	Tide (cm)
1	27.2528	27.2555	225.6
2	27.2738	27.2775	225.6
3	27.2989	27.3024	225.6
4	27.3270	27.3308	228.6


Fluorescence (ppb): Towyo 1
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
1
2
3
4
5

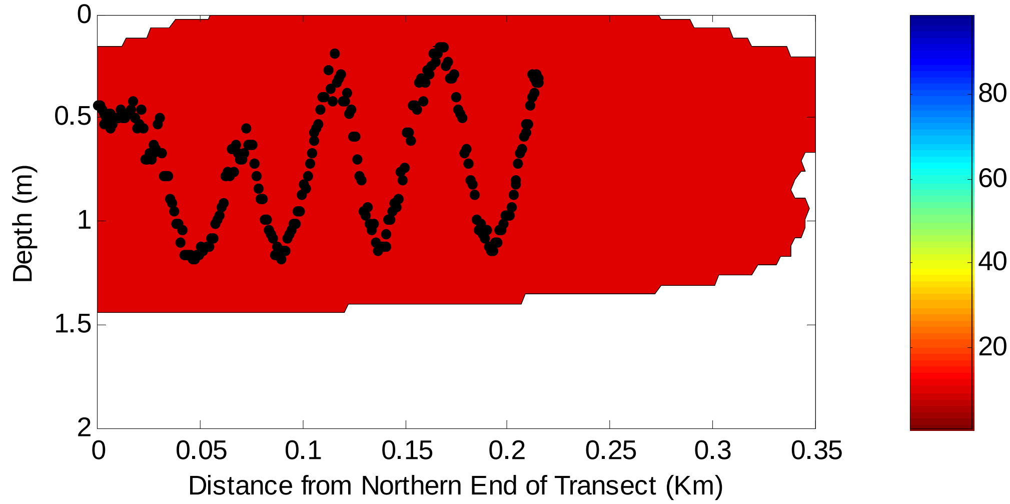

Fluorescence (ppb): Towyo 2
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
1
2
3
4
5


Fluorescence (ppb): Towyo 3
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
1
2
3
4
5

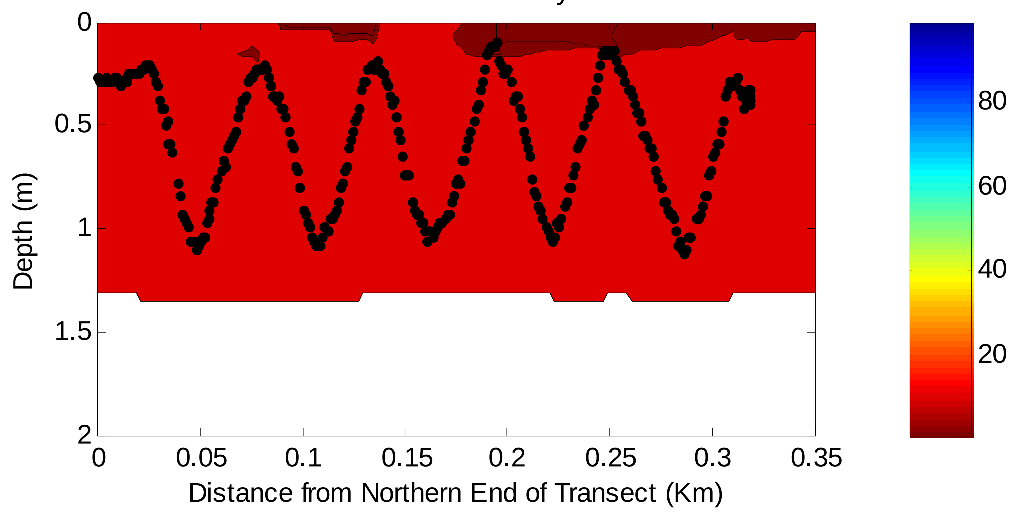
Fluorescence (ppb): Towyo 4

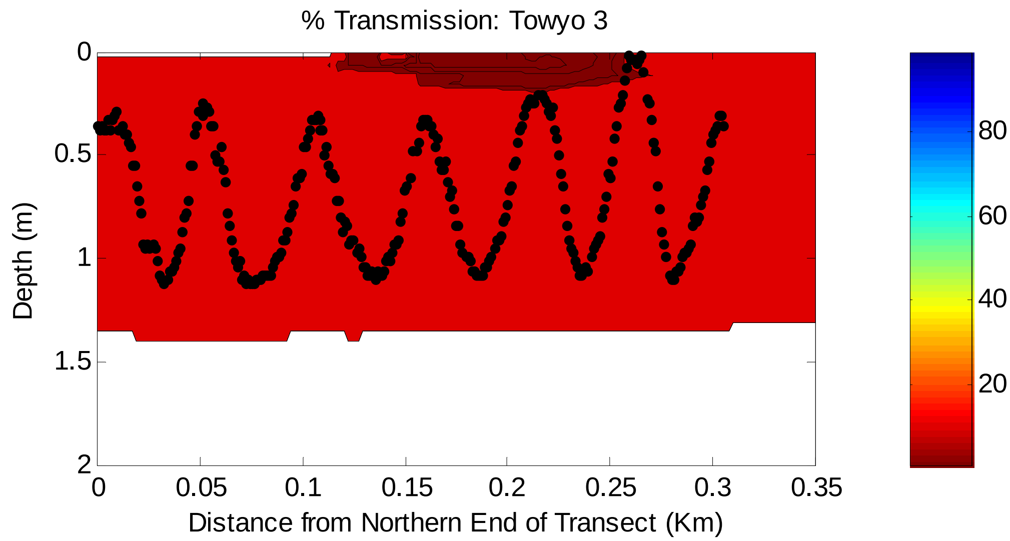


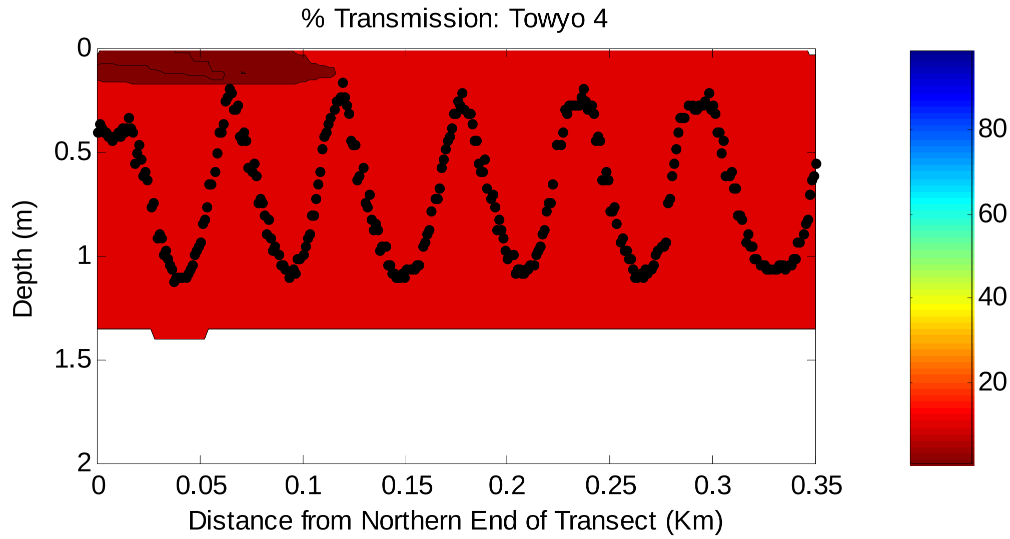
% Transmission: Towyo 1

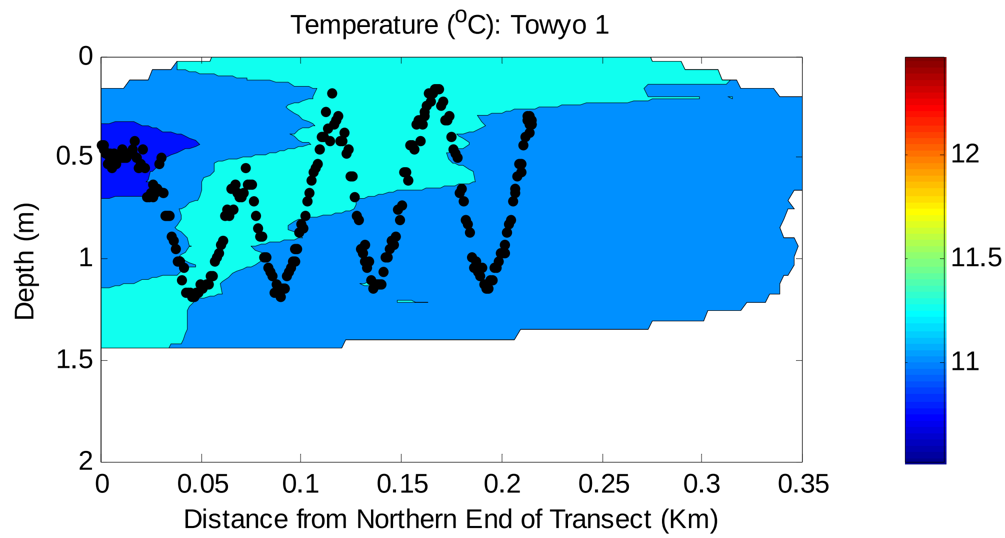


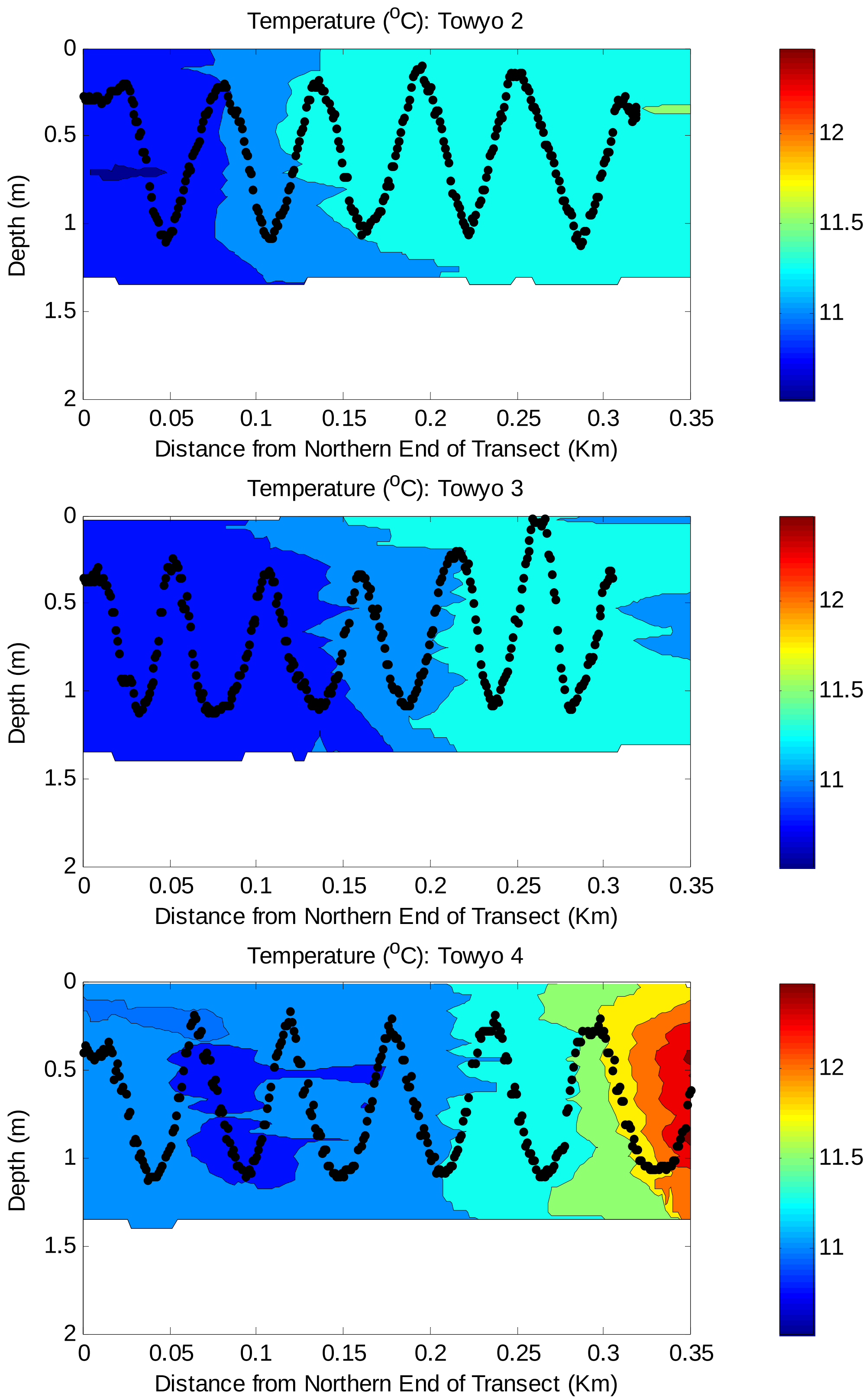
% Transmission: Towyo 2

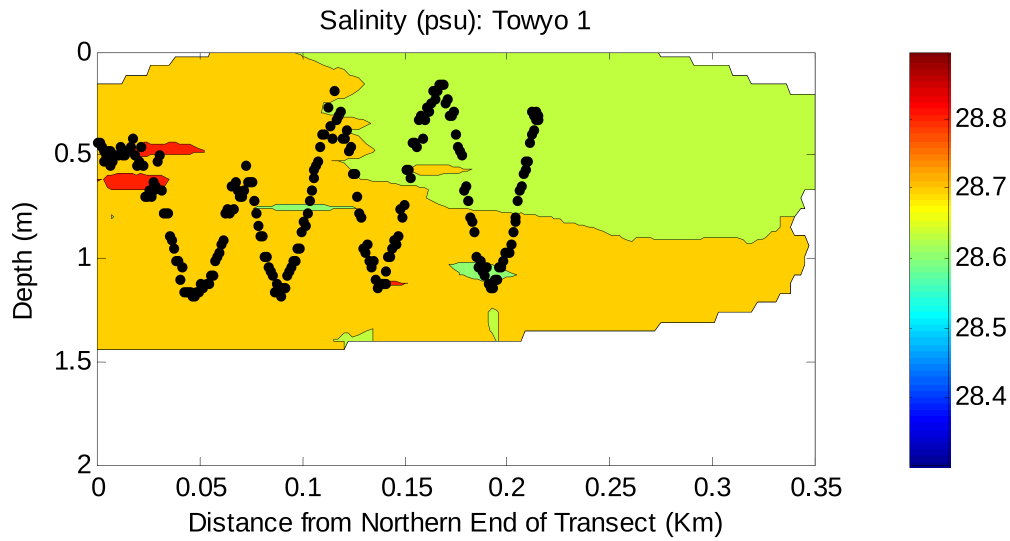


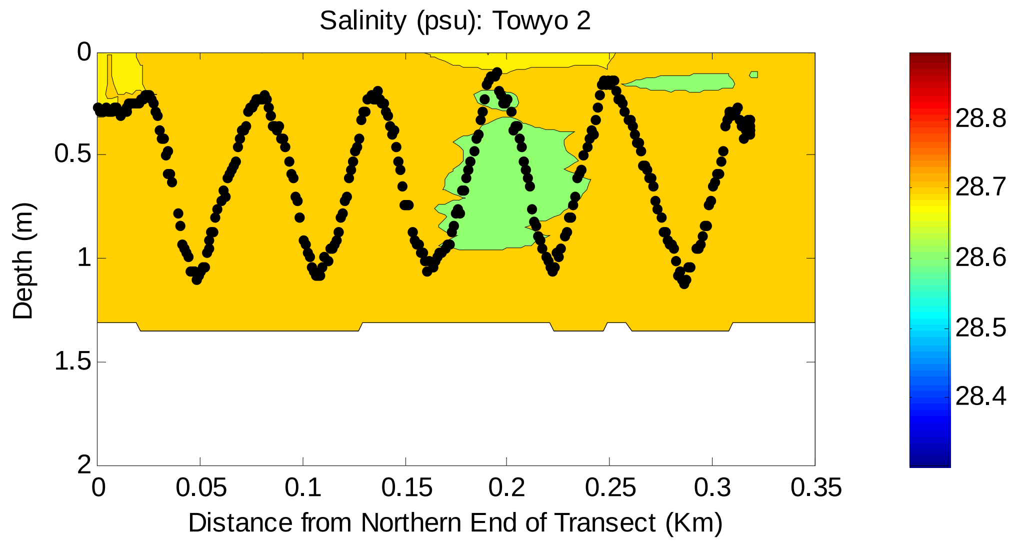

% Transmission: Towyo 3
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20

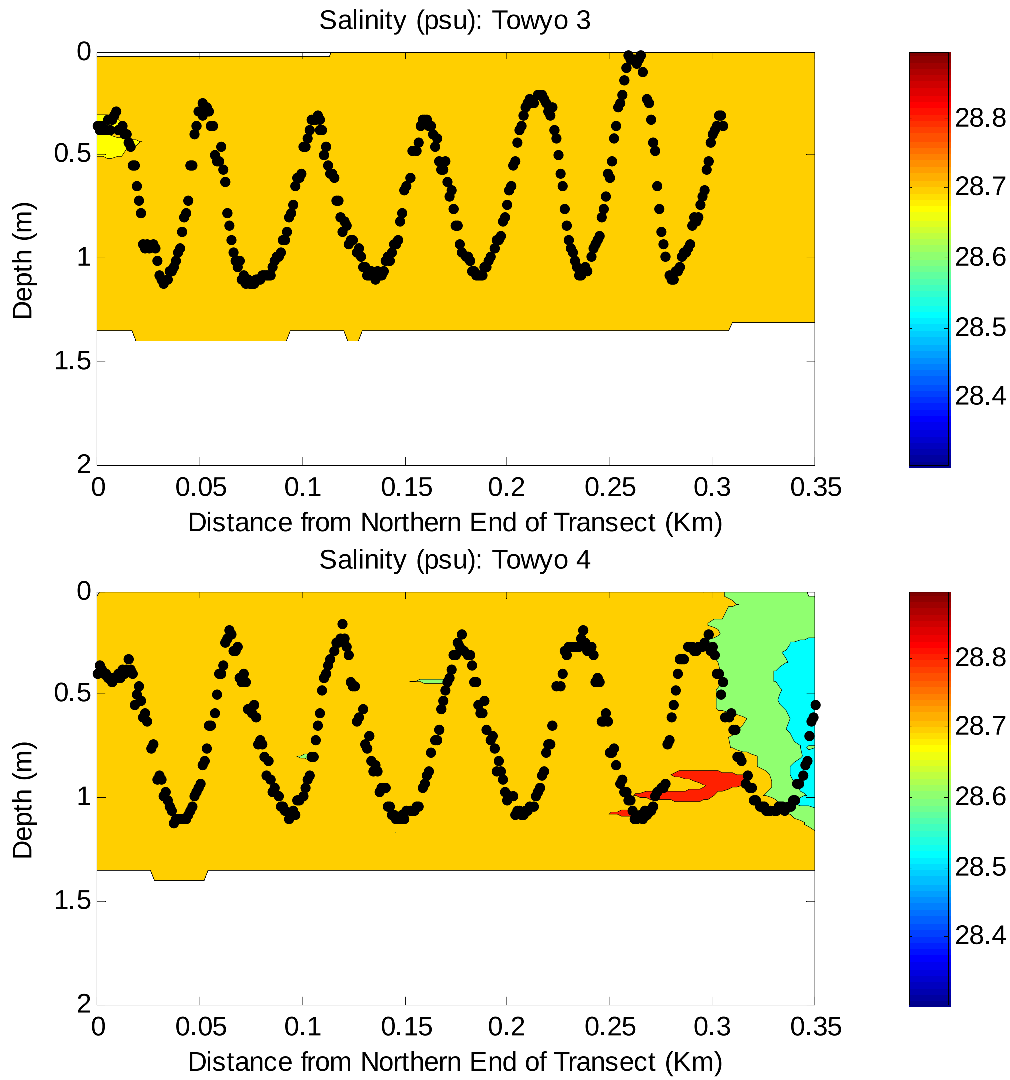

% Transmission: Towyo 4
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
80
60
40
20


Temperature (^{o}C): Towyo 1
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
12
11.5
11


Temperature (°C): Towyo 2
Depth (m)
Distance from Northern End of Transect (Km)
0
0.5
1
1.5
2
0.05
0.1
0.15
0.2
0.25
0.3
0.35
12
11.5
11
Temperature (°C): Towyo 3
Depth (m)
Distance from Northern End of Transect (Km)
Temperature (°C): Towyo 4
Depth (m)
Distance from Northern End of Transect (Km)


Salinity (psu): Towyo 1
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28.8
28.7
28.6
28.5
28.4


Salinity (psu): Towyo 2
Depth (m)
0
0.5
1
1.5
2
0
0.05
0.1
0.15
0.2
0.25
0.3
0.35
Distance from Northern End of Transect (Km)
28.8
28.7
28.6
28.5
28.4


Salinity (psu): Towyo 3
Depth (m)
Distance from Northern End of Transect (Km)
28.8
28.7
28.6
28.5
28.4
Salinity (psu): Towyo 4
Depth (m)
Distance from Northern End of Transect (Km)
28.8
28.7
28.6
28.5
28.4